HELIX Environmental Planning

Quarry Creek Master Plan

Biological Technical Report

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1.0 INTRODUCTION

This report provides a description of biological surveys performed to date, summarizes biological resources present, assesses proposed impacts to sensitive biological resources, and proposes compensatory mitigation measures associated with the Quarry Creek Master Plan (proposed project). This information provides the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), City of Carlsbad (City), project applicant, and the public with current biological data to satisfy review of the proposed project under the California Environmental Quality Act (CEQA) and other federal, state, and City regulations, including the Carlsbad Habitat Management Plan (Carlsbad HMP).

1.1 PROJECT LOCATION

The Quarry Creek Master Plan consists of 156.0 acres of property located in the northeast portion of the City of Carlsbad (Figure 1). The site is approximately 3.5 miles inland from the Pacific Ocean (Figure 2). The property is located within Carlsbad Local Facilities Management Plan (LFMP) Zone 25 in a Proposed Hardline Conservation Area (Figure 3). The site is located approximately 0.5 miles west of College Boulevard, on the south side of State Route (SR) 78.

1.2 PROJECT DESCRIPTION

The proposed project involves the development of a 156-acre property into an open space and residential-oriented planned community (Figure 4). An additional 2.8 acres of off-site impacts, including land in Oceanside is also included in the study area. Although the land in Oceanside is not part of the Master Plan for the City of Carlsbad, it is being included to account for grading impacts in the City of Oceanside. The property is located in an urbanized area in the extreme north-east section of the City. The eastern 100 acres of the plan area have historically been the subject of rock and concrete mining activities, which resulted in large areas of earth removal and an excavation scar. This area is now the subject of mine reclamation by the present owner of the property (not the development applicant), which will return the mined areas to a state which is usable for urban land uses per the local zoning and General Plan land uses designated for the property. The prior mining use and ongoing reclamation activities are a separate project from the proposed Master Plan.

The Quarry Creek Master Plan is an effort to provide a regulatory land use document which, when implemented, will provide; (a) a sustainable community, (b) protection of El Salto Falls and Buena Vista Creek, (c) compliance with the Carlsbad HMP, (d) replacement of the rock quarry with attractive urban development, and (e) consistency with adopted Smart Growth policies. To this end, this Master Plan is produced in the context of an environmentally, socially, and economically-beneficial development, and thus incorporates 3 main land use categories: open spaces, public use, and residential areas.

The Master Plan preserves approximately 85.8 acres (55 percent) of the property in open space. This includes 3 separate areas of important environmental resources, including the Buena Vista Creek and buffers, large tracts of riparian and wetland conservation areas, hillsides, and revegetated manufactured slopes adjacent to open spaces. The Quarry Creek Master Plan project

will generate a maximum of 656 dwelling units within 5 residential neighborhoods. A Community Facility site is proposed at the Marron Road entry to the property.

The following project design measures shall be included in the proposed project to minimize impacts to biological resources.

- Temporary fencing (with silt barriers) shall be installed at the limits of project impacts (including construction staging areas and access routes) to prevent additional sensitive habitat impacts and to prevent the spread of silt from the construction zone into adjacent habitats to be avoided. Fencing shall be installed in a manner that does not impact habitats to be avoided. The applicant shall submit to the City, and the U.S. Army Corps of Engineers (Corps), USFWS, and CDFG (collectively referred to as "Resource Agencies"), for approval at least 30 days prior to initiating project impacts and the final plans for initial clearing and grubbing of sensitive habitat and project construction. These final plans shall include photographs that show the fenced limits of impact and all areas (including riparian/wetland or coastal sage scrub) to be impacted or avoided. If work occurs beyond the fenced or demarcated limits of impact, all work shall cease until the problem has been remedied to the satisfaction of the City and the Resource Agencies. Any riparian/wetland or upland habitat impacts that occur beyond the approved fence shall be mitigated at a minimum 5:1 ratio. Temporary construction fencing shall be removed upon project completion.

- A monitoring biologist approved by the Resource Agencies shall be on site during clearing and grubbing of habitat that occurs within 200 feet of the grading limits. The monitoring biologist shall conduct weekly site visits during rough grading to ensure that the grading limits have been respected. The biologist must be knowledgeable of gnatcatcher, vireo, and flycatcher biology and ecology. The applicant shall submit the biologist's name, address, telephone number, and work schedule on the project to the City and the Resource Agencies at least 7 days prior to initiating project impacts.

- The monitoring biologist shall periodically monitor adjacent habitats for excessive amounts of dust, and shall recommend remedial measures to address dust control if necessary. The monitoring biologist shall implement a contractor training program to insure compliance with permit conditions. Any violations would be reported to the City, and the USFWS and CDFG (collectively referred to as "Wildlife Agencies") within 24 hours. Weekly reports will be submitted during initial clearing and grubbing, and monthly reports shall be submitted throughout the remainder of the grading of the site. A final report shall be submitted to the City and the Wildlife Agencies within 60 days of project completion.

- The clearing and grubbing of sensitive habitats shall occur outside of the bird breeding season (February 15 to September 15), unless a qualified biologist demonstrates to the satisfaction of the City and the Wildlife Agencies that all nesting is complete.

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Regional Location Map

QUARRY CREEK MASTER PLAN

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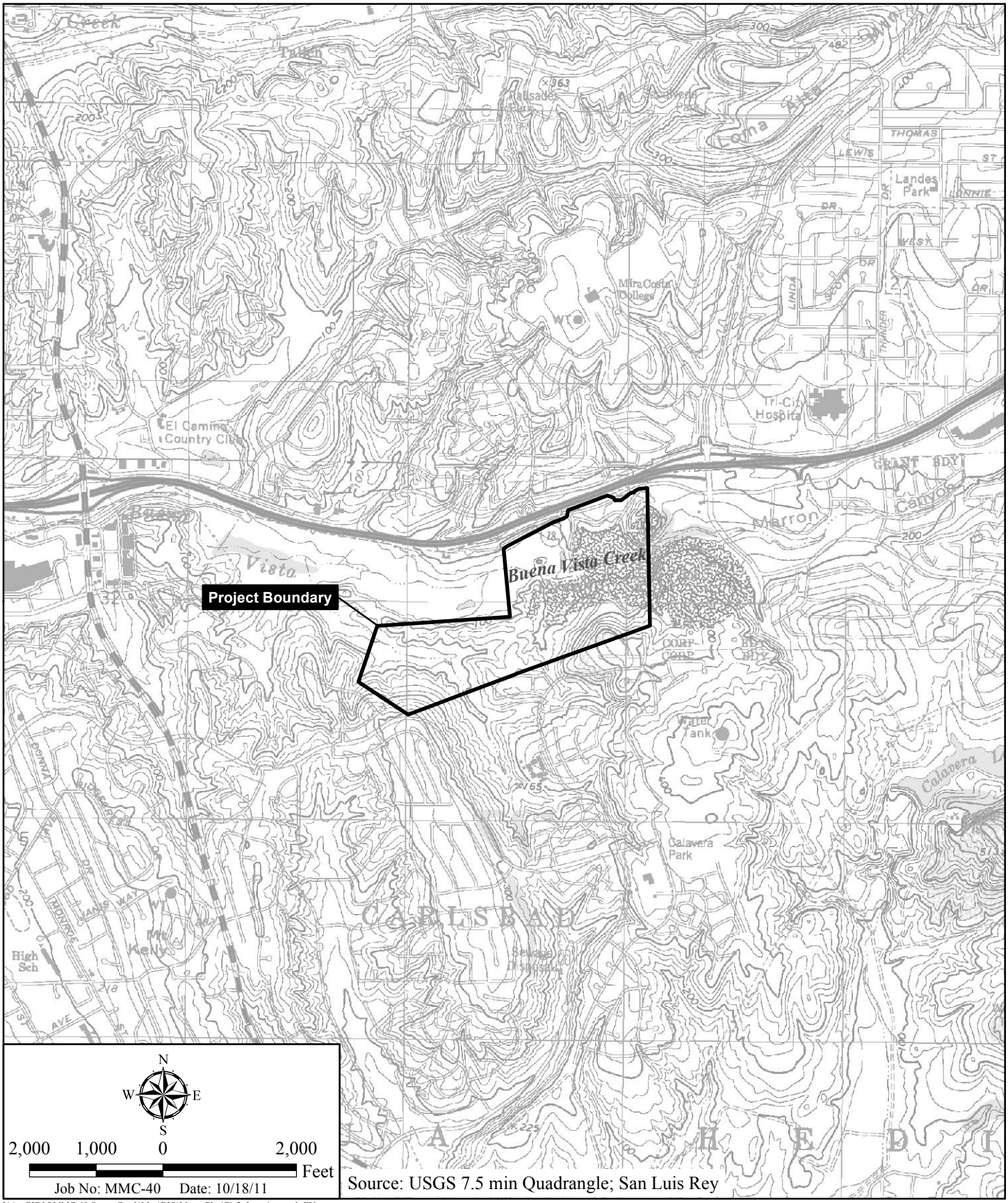
Figure 1



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Project Location Map

QUARRY CREEK MASTER PLAN

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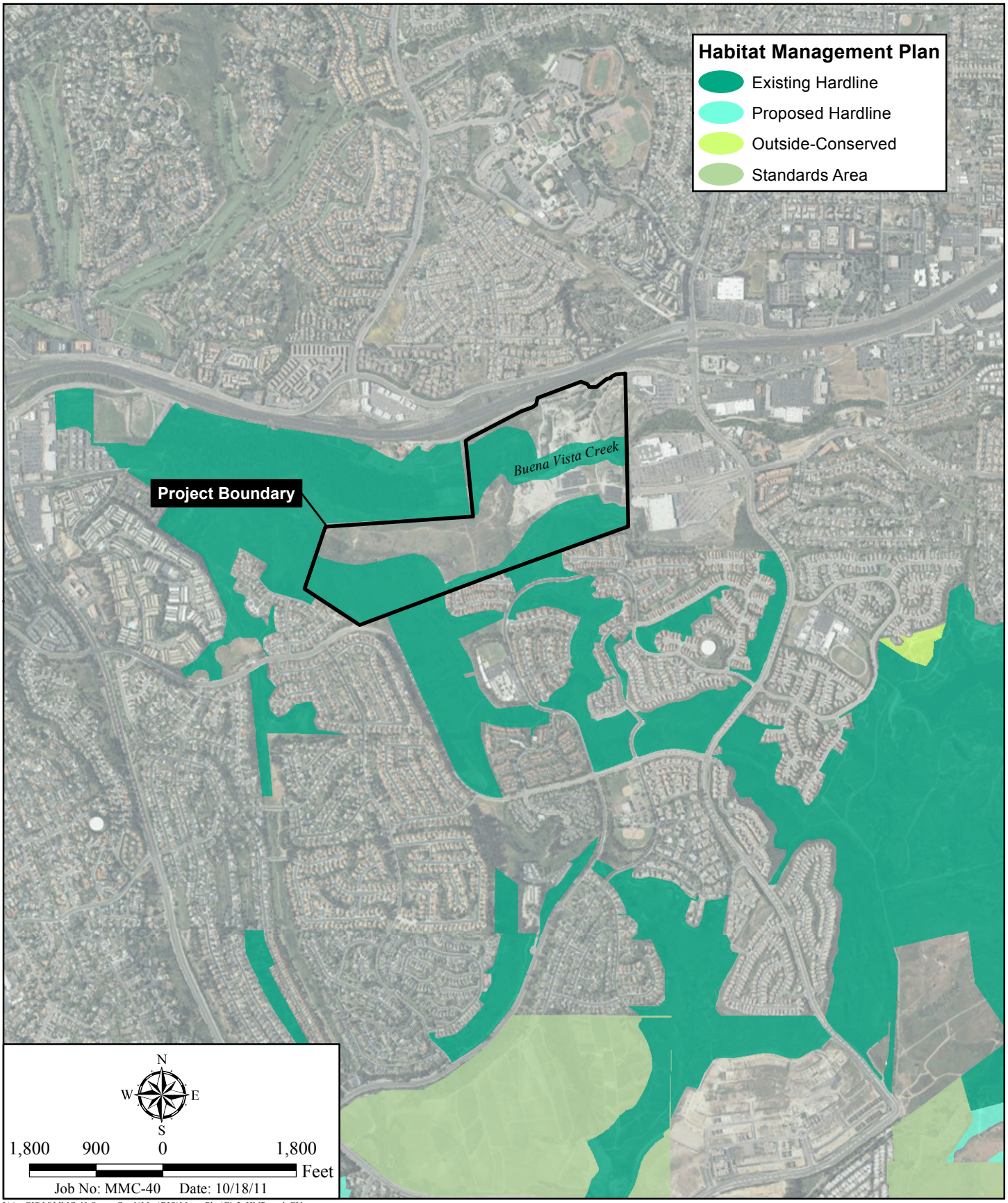
Figure 2



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Conservation Components

QUARRY CREEK MASTER PLAN

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Figure 3

STATISTICAL SUMMARY

PA	LAND USE	GENERAL PLAN LAND USE	GENERAL PLAN DENSITY RANGE	GROSS ACRES	NET ACRES	DENSITY	MAX. UNITS
RESIDENTIAL							
R-1	Apartments *	(RH) High Density	15-23 du/ac	7.1	6.0	21.4	129
R-2	Planned Development	(RH) High Density	15-23 du/ac	11.1	9.4	21.4	202
R-3	Planned Development	(RMH) Medium-High Density	(8-15 du/ac)	6.7	5.7	14.2	81
R-4	Planned Development	(RMH) Medium-High Density	(8-15 du/ac)	18.4	15.6	12.0	188
R-5	Planned Development	(RMH) Medium-High Density	(8-15 du/ac)	5.6	4.8	11.8	56
			RESIDENTIAL SUB-TOTALS	*48.9*	*41.6*	--	*656*
PUBLIC USE							
P-1	Community Facilities	(CF) Community Facility	--	0.9	0.9	--	--
P-2	Community Facility Site	(CF) Community Facility	--	2.1	1.2	--	--
P-3	Community Recreation Area	(OS) Open Space	--	1.3	1.1	--	--
P-4	Trail, View Area, Water Quality Basin	(OS) Open Space	--	3.3	3.3	--	--
P-5	Community Facilities	(CF) Community Facility	--	0.6	0.6	--	--
			PUBLIC USE SUB-TOTALS	*8.2*	*7.1*	--	--
OPEN SPACE							
OS-1	Southerly Open Space Corridor Preserve	(OS) Open Space	--	57.9	--	--	--
OS-2	Wetland Preserve	(OS) Open Space	--	20.1	--	--	--
OS-3	Buena Vista Creek and Buffer	(OS) Open Space	--	8.4	--	--	--
OS-4	R-5 Northern Brush Management Zone	(OS) Open Space	--	1.5	--	--	--
			OPEN SPACE SUB-TOTALS	*87.9*	--	--	--
	Public Roads	--	--	11.0	11.0	--	--
			PROJECT TOTALS	*156.0*	*59.7*	--	*656*

* Includes affordable and potential market rate units.

Limits of Hardline Map Boundary

Brush Management per HMP Hardline Map

NOTE: Units can be transferred subject to total project unit maximum.

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Master Land Use Plan

QUARRY CREEK MASTER PLAN

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Figure 4

- A conservation easement shall be placed over those portions of the property required to meet project mitigation obligations (a conservation easement is being placed over the open space previously set aside as part of the quarry reclamation effort).

- The applicant shall prepare and implement a perpetual management, maintenance, and monitoring plan (PMP) for all on-site biological conservation easement areas (a perpetual management, maintenance, and monitoring plan already exists over the open space previously set aside as part of the quarry reclamation effort). The applicant shall also establish a non-wasting endowment for an amount approved by the City and Resource Agencies based on a Property Analysis Record (PAR; Center for Natural Lands Management 2008) or similar cost estimation method to secure the ongoing funding for the perpetual management, maintenance, and monitoring of the biological conservation easement area by an agency, non-profit organization, or other entity approved by the City and Resource Agencies. The applicant shall submit a draft PMP including: (1) a description of perpetual management, maintenance, and monitoring actions and the PAR or other cost estimation results for the non-wasting endowment; and (2) proposed land manager's name, qualifications, business address, and contact information to the City and Resource Agencies for review and approval. Upon approval of the draft plan, the applicant shall submit the final plan to the City and Resource Agencies and a contract with the approved land manager, as well as transfer the funds for the non-wasting endowment to a non-profit conservation entity, prior to initiating project impacts.

- Employees shall strictly limit their activities, vehicles, equipment, and construction materials to the fenced project footprint.

- To avoid attracting predators of the gnatcatcher, vireo, and flycatcher, the project site shall be kept as clean of debris as possible during project grading. All food-related trash items shall be enclosed in sealed containers and regularly removed from the site.

- Pets of project personnel shall not be allowed on the project site during grading.

- Disposal or temporary placement of excess fill, brush, or other debris shall not be allowed in Waters of the U.S. (WUS) or their banks.

- All equipment maintenance, staging, and dispensing of fuel, oil, coolant, or any other such activities shall occur in designated areas outside of WUS within the fenced project impact limits. These designated areas shall be located in previously compacted and disturbed areas to the maximum extent practicable in such a manner as to prevent any runoff from entering WUS, and shall be shown on the construction plans. Fueling of equipment shall take place within existing paved areas greater than 100 feet from WUS. Contractor equipment shall be checked for leaks prior to operation and repair, as necessary. "No-fueling zones" shall be designated on construction plans.

- No species on the California Invasive Plant Council's (Cal-IPC) "Invasive Plant Inventory" list shall be included in the project landscaping plans.

- All exterior lighting adjacent to preserved habitat shall be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat to the maximum extent practicable.

- All planning areas adjacent to preserved habitat shall have non-reflective windows to minimize bird strike issues.

1.3 PHYSIOGRAPHY

The project area has been extensively modified by previous mining activities, but includes a portion of Buena Vista Creek and its adjacent riparian vegetation. Due to the historic mining activities, the site's topography is irregular. The southern portion of the site contains a steep north-facing cut slope traversed by concrete brow ditches, while the central and northern portions of the site contain gently south-facing slopes with Buena Vista Creek running east to west.

Land uses that surround the property include SR 78 (and the frontage road Haymar Drive to the north), the Quarry Creek Shopping Center (a retail commercial development) to the east, the Calavera Hills residential neighborhood (located up the slope southerly of the site), and the Buena Vista Valley Conservation Area (including the Marron Adobe house and related accessory uses) to the west.

Elevations within the Quarry Creek Project range between approximately 66 feet to 333 feet above mean sea level.

Nine soil types are mapped within the Quarry Creek Project area and include Diablo Clay (15 to 30, 30 to 50 percent slopes), Salinas Clay (2 to 9 percent slope), Las Flores loamy fine sand (9 to 15 percent slope, eroded), Cieneba very rocky coarse sandy loam (30 to 75 percent slopes), Carlsbad gravelly loamy sand (5 to 9, 15 to 30 percent slope), Linne clay loam (9 to 30 percent slope), and gravel pits (USDA 2011).

2.0 METHODS

In addition to conducting field surveys, a review of existing literature of the project area was performed, including searches of the California Native Plant Society (CNPS) and CDFG's California Natural Diversity databases (CNDDB; CDFG 2011) to determine sensitive species reported for the project vicinity. These data provided biologists with essential background information and previously reported conditions for both the site and surrounding area. Surveys conducted by HELIX in 2010 and 2011 included all potential habitats for the focus species within the 156-acre proposed project area, while the previous surveys covered potential habitat in the eastern 100 acres.

2.1 VEGETATION MAPPING

Vegetation was mapped by HELIX biologists in 1997 and updated in 1999 and 2006. The western portion of the project was mapped in 2010. Vegetation mapping for the portions of the

Buena Vista Creek channel and side slopes that are being revegetated as part of the reclamation plan for the site were mapped a "revegetated" habitat and were assessed on the assumption that these are fully functioning habitats, even though the revegetation efforts were only initiated in 2011. The study area was surveyed on foot, and vegetation was mapped on 1"=200' scale topographic maps of the site, using an aerial photograph as a reference. All plant and animal species observed on site were recorded. Animal identifications were made in the field by direct visual observation or indirectly by detection of calls, burrows, tracks, or feces. All plant identifications were made in the field or in the lab through comparison with voucher specimens or photographs.

2.2 JURISDICTIONAL DELINEATION

A delineation of on-site jurisdictional areas was performed by HELIX in 1999, and updated in 2008 and 2011. All areas with depressions, drainage channels, or wetland vegetation were evaluated for the presence of Corps and CDFG jurisdictional wetlands, as well as WUS and CDFG streambeds in accordance with applicable guidelines (Environmental Laboratory 1987; Studt 1991; Williams 1992). The only exception is the large area of wetland vegetation in the northwestern portion of the site. This area was not included in Corps or CDFG jurisdictional acreage calculations because there are no proposed impacts in this area. Each area was delineated according to 3 criteria: vegetation, hydrology, and soils. Wetland affiliations of plant species follow the USFWS Branch of Habitat Assessment (USFWS 1996). Wetland hydrology was evaluated by the presence of surface water, general drainage patterns, watermarks, drift lines, debris, soil texture, sediment deposits, and a positive FAC-neutral test. For the portions of the Buena Vista Creek channel and side slopes that are being revegetated as part of the reclamation plan for the site, the bottom of the channel was considered Corps and CDFG jurisdictional based on the assumption that these areas will become jurisdictional areas over the course of the revegetation effort for the quarry.

2.2.1 U.S. Army Corps of Engineers

All potential Corps jurisdictional wetlands and WUS were surveyed. If an area was suspected of being a wetland, vegetation and hydrology indicators were noted and soil was sampled and described per the Wetlands Delineation Manual (Environmental Laboratory 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Corps, 2008). The area was then determined to be a federal Corps wetland if it satisfied all 3 wetland criteria.

Non-wetland WUS under Corps jurisdiction exist in areas exhibiting hydrologic indicators but lacking sufficient hydrophytic vegetation and/or hydric soils indicators. Non-wetland WUS encompassed by the ordinary high water mark were measured, and vegetation (if present) was noted.

2.2.2 California Department of Fish and Game

California Department of Fish and Game jurisdictional wetland boundaries were determined based on the presence of riparian vegetation or regular surface water flow. Streambeds under

CDFG jurisdiction were delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). The boundaries of CDFG jurisdictional areas include all riparian shrub or tree canopy and may extend beyond the banks of a stream.

2.3 FOCUSED BIOLOGICAL SURVEYS

2.3.1 Rare Plants

Focused surveys for sensitive plants within the study area were performed during spring and summer 1997, on April 25 and June 6, 2008, and April 27, May 2, and June 20, 2011. Sensitive plant surveys were conducted on foot and focused on those areas supporting native vegetation communities rather than the highly disturbed mining areas, which supported little vegetation of any kind. Any rare plants that were observed were mapped on aerial photographs and/or topographical maps of the property.

2.3.2 Least Bell's Vireo

Focused surveys for the least Bell's vireo (*Vireo bellii pusillus*) were originally performed in 1997, then again in 1999 (HELIX 2000), 2002, 2003, 2005, 2008, and 2011 (Table 1). Each year, generally 8 site visits (only 3 in 1997) were conducted per established protocol (USFWS 2001). Site visits were conducted between dawn and 1100 hours at least one week apart. Transects were walked through the riparian habitats along Buena Vista Creek.

Table 1
LEAST BELL'S VIREO SURVEY/SOUTHWESTERN WILLOW FLYCATCHER SURVEY INFORMATION

DATE	SURVEY	BIOLOGIST	TIME	WEATHER CONDITIONS
June 3, 1997	LBVI	Deborah Leonard	0630-0945	Overcast, 65-72°F, wind 0-5 mph
June 10, 1997	LBVI	Deborah Leonard	0615-0815	Overcast, 60-65°F, wind 0-5 mph
June 25, 1997	LBVI	Deborah Leonard	0745-0930	Partly cloudy, 70-75°F, wind 0-5 mph
May 21, 1999	LBVI WIFL	John Konecny	0645-1050	Overcast, 60-65°F, wind 1-3 mph
May 31, 1999	LBVI WIFL	John Konecny	0620-1040	Overcast, 62-67°F, wind 1-3 mph
June 10, 1999	LBVI WIFL	John Konecny	0620-1035	Overcast to partly cloudy, 60-65°F, wind 1-10 mph
June 21, 1999	WIFL	Scott Taylor	0700-1000	Overcast to clear, 60-70°F, wind 0-5 mph
June 30, 1999	LBVI WIFL	John Konecny	0630-1040	Overcast to clear, 65-75°F, wind 3-5 mph

Table 1 (cont.)
LEAST BELL'S VIREO SURVEY/SOUTHWESTERN WILLOW FLYCATCHER SURVEY INFORMATION

DATE	SURVEY	BIOLOGIST	TIME	WEATHER CONDITIONS
July 10, 1999	LBVI WIFL	John Konecny	0610-1010	Overcast to clear, 65-70°F, wind 3-5 mph
July 20, 1999	LBVI	Scott Taylor	0800-1030	Overcast to clear, 65-70°F, wind 0-5 mph
July 30, 1999	LBVI	Scott Taylor	0800-1030	Overcast to clear, 62-68°F, wind 0-5 mph
May 17, 2002	WIFL	John Konecny	0550-0845	Overcast, 61°F, wind 1-3 mph
June 15, 2002	WIFL	John Konecny	0540-0805	Overcast, 56°F, wind 3-5 mph
July 3, 2002	WIFL	John Konecny	0530-0750	Overcast, 59°F, wind 1-3 mph
July 10, 2002	WIFL	John Konecny	0805-1010	Overcast, 62°F, wind 3-5 mph
July 16, 2002	WIFL	John Konecny	0530-0740	Overcast, 59°F, wind 1-3 mph
May 16, 2003	LBVI	Ryan Young	0545-1030	Clear, temp not available, no wind
May 26, 2003	LBVI WIFL	Ryan Young	0530-0930	Overcast, 60-66°F, no wind
June 4, 2003	LBVI WIFL	Ryan Young	0600-0830	Overcast, 62-68°F, wind 0-1 mph
June 14, 2003	LBVI	Ryan Young	0530-0745	Overcast, 63-68°F, wind 0-1 mph
June 26, 2003	LBVI WIFL	Ryan Young	0815-1000	Overcast, 67°F, wind 0-2 mph
July 5, 2003	LBVI WIFL	Ryan Young	0800-0945	Overcast, 65-67°F, no wind
July 14, 2003	LBVI WIFL	Ryan Young	0745-0930	Overcast, 70-72°F, wind 0-6 mph
July 24, 2003	LBVI	Ryan Young	0815-1030	Clear, 75-80°F, wind 1-2 mph
April 25, 2005	LBVI	Deborah Leonard	0900-1100	Mostly clear, 63-65°F, wind 2-5 mph
May 9, 2005	LBVI	Deborah Leonard	0845-1015	Partly cloudy, 63-65°F, wind 0-4 mph
May 19, 2005	LBVI	Deborah Leonard	0800-1100	Clear, 63-75°F, wind 0-5 mph
May 31, 2005	LBVI	Deborah Leonard	0815-1045	Overcast-hazy, 65-67°F, wind 0-2 mph
June 10, 2005	LBVI	Deborah Leonard	0800-1100	Overcast-hazy, 57-64°F, wind 0-2 mph
June 21, 2005	LBVI	Deborah Leonard	0800-1100	Clear, 72-76°F, wind 2-5 mph
July 1, 2005	LBVI	Deborah Leonard	0730-1030	Overcast-hazy, 65-67°F, wind 0-3 mph

Table 1 (cont.)
LEAST BELL'S VIREO SURVEY/SOUTHWESTERN WILLOW FLYCATCHER SURVEY INFORMATION

DATE	SURVEY	BIOLOGIST	TIME	WEATHER CONDITIONS
July 12, 2005	LBVI	Deborah Leonard	0800-1100	Overcast-clear, 68-75°F, wind 0-4 mph
May 1, 2008	LBVI	Kathy Pettigrew	0800-0900	Clear, 66-67°F, wind 0-3 mph
May 12, 2008	LBVI	Kathy Pettigrew	0800-0900	Overcast, 58°F, wind 3-6 mph
May 22, 2008	LBVI WIFL	Kathy Pettigrew	0645-0745	Overcast, 58-59°F, wind 2-6 mph
June 4, 2008	LBVI WIFL	Kathy Pettigrew	0845-1015	Overcast, 62-63°F, wind 2-4 mph
June 17, 2008	LBVI	Kathy Pettigrew	0600-0800	Overcast, 62-70°F, wind 0-3 mph
June 30, 2008	LBVI WIFL	Kathy Pettigrew	0800-0900	Clear, 70-72°F, wind 0-4 mph
July 10, 2008	LBVI WIFL	Kathy Pettigrew	0830-0930	Hazy to clear, 66-68°F, wind 0-3 mph
July 16, 2008	LBVI WIFL	Kathy Pettigrew	0915-1015	Partly cloudy to clear, 70-72°F, wind 0-3 mph
May 10, 2011	LBVI	Jason Kurnow	0830-1030	Clear, 60-65°F, wind 0-3 mph
May 20, 2011	LBVI WIFL	Eric LaCoste	0725-1000	Overcast, 60°F, wind 0-1 mph/slightly overcast, 64°F, wind 2-5 mph
June 2, 2011		Eric LaCoste	070001015	Clear, 62°F, wind 0-1 mph/clean, 67°F, wind 1-3 mph
June 13, 2011	LBVI	Kim Davis	0800-1100	Mostly cloudy to clear, 65-71°F, wind 0-5 mph
June 26, 2011	LBVI WIFL	Eric LaCoste	0645-1000	Overcast, 65°F, wind 0-1 mph/clear, 68°F, wind 1-2 mph
July 5, 2011	LBVI WIFL	Eric LaCoste	0700-1000	Overcast, 68°F, wind 1-2 mph/Overcast, 78°F, wind 2-4 mph
July 15, 2011	LBVI WIFL	Eric LaCoste	0730-0930	Overcast, 65°F, wind 1-2 mph/overcast, 71°F, wind 1-2 mph

2.3.3 Southwestern Willow Flycatcher

Protocol surveys for the southwestern willow flycatcher (*Empidonax traillii extimus*) were conducted during the 1999, 2002, 2003, 2008, and 2011 breeding seasons, following the protocol of Sogge et al. (1997 and 2000; Table 1.1). Each site visit was conducted between dawn and 1100 hours and entailed walking slowly along riparian habitat, recording all bird species detected in the vicinity. Tape-recorded flycatcher vocalizations were played at approximately 50-meter (165-foot) intervals to elicit a response from otherwise undetected birds. Surveys for the least Bell's vireo were conducted concurrently with southwestern willow flycatcher surveys in 1999, 2003, 2008, and 2011.

2.3.4 Coastal California Gnatcatcher

Protocol surveys for the coastal California gnatcatcher (*Polioptila californica californica*) were conducted on the study area in 1999, 2002, 2003, 2008, and 2011 (Table 2). Each survey consisted of 3 breeding season site visits according to USFWS presence/absence survey protocol (USFWS 1997). Surveys through appropriate Diegan coastal sage scrub habitat were performed on-foot with the aid of binoculars and a 1"=300' scale aerial photograph of the site. Taped gnatcatcher vocalizations were played during each survey to elicit a vocal response from otherwise undetected birds. To minimize disturbance to this species, the duration of taped vocalizations was limited to 5 seconds, at intervals of greater than 5 minutes. During the last survey of 2011, the nesting status was assessed for pairs that could potentially be impacted by grading noise during the breeding season based on proposed grading limits during the breeding season.

Table 2
COASTAL CALIFORNIA GNATCATCHER SURVEY INFORMATION

DATE	BIOLOGIST(S)	TIME	CONDITIONS
August 2, 1999	Scott Taylor	0815-1035	Overcast to clear, 62-68°F, wind 0-8 mph
August 9, 1999	Scott Taylor	0850-1200	Partly cloudy to clear, 66-72°F, 0-3 mph
August 16, 1999	Scott Taylor	0830-1200	Clear, 67-72°F, wind 0-3 mph
April 25, 2002	Scott Taylor	0830-1100	Clear, 64-66°F, wind 5-8 mph
May 3, 2002	Scott Taylor	1740-1040	Mostly cloudy, 63-65°F, wind 0-3 mph
May 10, 2002	Scott Taylor	0920-1200	Mostly cloudy, 64-69°F, wind 0-3 mph
July 31, 2003	Deborah Leonard Kathy Pettigrew	0730-1030	Partly cloudy to clear, 70-75ºF, wind 0-2 mph
August 7, 2003	Deborah Leonard Brian Parker Kathy Pettigrew	0830-1030	Clear, 75-82ºF, wind 0-2 mph
August 14, 2003	Deborah Leonard	0945-1130	Clear, 73-78ºF, wind 0-5 mph
May 1, 2008	Kathy Pettigrew	1030-1200	Clear, 69-70˚F, wind 0-3 mph
May 12, 2008	Kathy Pettigrew	1030-1200	Overcast, 62-63ºF, wind 2-4 mph
May 22, 2008	Kathy Pettigrew	0915-1100	Mostly cloudy-cloudy, 62-63ºF, wind 2-6 mph
February 2, 2011	J. Kurnow	0830/1130	0% cloud cover, 56°F, wind 1-3 mph / 0% cloud cover, 61°F, wind 1-3 mph
February 17, 2011	J. Kurnow	0830/1100	0% cloud cover, 60°F, wind 1-3 mph / 0% cloud cover, 67°F, wind 2-5 mph

Table 2 (cont.) **COASTAL CALIFORNIA GNATCATCHER SURVEY INFORMATION**			
DATE	**BIOLOGIST(S)**	**TIME**	**CONDITIONS**
June 6, 2011	J. Kurnow E. Harris*	0900/1100	0% cloud cover, 63°F, wind 2-4 mph / 2% cloud cover, 67°F, wind 5-7 mph
June 14, 2011	J. Kurnow K. Davis* E. Harris*	0900/1105	45% cloud cover, 66°F, wind 1-4 mph / 15% cloud cover, 76°F, wind 2-6 mph
June 24, 2011	J. Kurnow K. Davis* E. Harris*	0700/1100	Overcast, 62°F, wind 1-2 mph / 20% cloud cover, 68°F, wind 3-8 mph

*Supervised individual

2.3.5 Burrowing Owl

A focused burrowing owl (*Athene cunicularia*) presence/absence survey was performed by HELIX biologist Scott Taylor on June 2, 1999 and updated by Deborah Leonard on May 9, 2005, in accordance with recommended survey protocol (CDFG 1995).

An additional survey was conducted according to the burrowing owl survey protocol by the California Burrowing Owl Commission (CBOC, 1993) and complies with the CDFG burrowing owl survey guidelines (1995). HELIX biologist Rob Hogenauer conducted a 4-visit burrowing owl survey in June and July 2011. Time and weather conditions of the survey were recorded (Table 3). Transects approximately 20 to 30 meters apart were surveyed in appropriate habitat, while portions of the property were surveyed via meandering transects due to patchiness of habitat. A 500-foot buffer was visually surveyed with the aid of binoculars where appropriate burrowing owl habitat bordered the survey area. Mr. Hogenauer walked slowly and methodically, closely checking the areas that met the basic requirements of owl habitat (listed below).

- Open expanses of sparsely vegetated areas (< 30 percent canopy cover for trees and shrubs)
- Gently rolling or level terrain
- An abundance of small mammal burrows, especially those of the California ground squirrel
- Fence posts, rock, or other low perching locations

Table 3 SURVEY TIMES AND CONDITIONS			
SURVEY DATE	**BIOLOGIST**	**TIME**	**WEATHER CONDITIONS START/STOP**
05/09/05	D. Leonard	10:15-12:15	Partly cloudy, 65º, wind 0-2 mph/partly cloudy, 68˚F, wind 2-4 mph
12/05/05	K. Pettigrew S. Howard	7:30-11:30	Mostly clear, 56º, wind 0-3 mph/clear, 72˚F, wind 0-3 mph
6/27/11	R. Hogenauer	0530-0735	Cloudy, 62º F-72° F, wind 1-3 mph
6/30/11	R. Hogenauer	0535-0740	Clear, 58º F – 76° F, Wind 0-3 mph
7/5/11	R. Hogenauer	0545-0730	Cloudy, 70° F – 79° F, wind 0-1 mph
7/7/11	R. Hogenauer	0530-0730	Clear, 71°F-80°F, wind 1-4 mph

Transects were varied as to be surveyed in different directions (east-west vs. north-south) throughout all potential burrowing owl habitat on the property to allow for the best possible coverage. All potential owl burrows were checked for sign of recent owl occupation. Sign of occupied burrows include:

- Pellets/casting (regurgitated fur, bones and insect parts)
- White wash (excrement)
- Feathers

2.3.6 Arroyo Toad

Focused surveys for the arroyo toad (*Bufo californicus*) were performed by HELIX biologists in 1999 and 2002 (Table 4). Three nighttime site visits were conducted in 1999, and 6 site visits were conducted in 2002, including a diurnal survey conducted immediately prior to the first nocturnal survey to determine areas of highest toad potential and to establish survey routes. Because arroyo toads are generally less active under the bright illumination of a full moon, surveys were avoided during the full moon to optimize the likelihood of detecting toads, if present. Surveys in 2002 were conducted according to established USFWS survey protocol (USFWS 1999). It was determined following the survey in 2002 that additional surveys were not warranted because the habitat on site is not considered suitable.

Table 4 ARROYO TOAD SURVEY INFORMATION			
DATE	**BIOLOGIST(S)**	**TIME**	**WEATHER CONDITIONS/ LUNAR PHASE**
May 18, 1999	Scott Taylor Greg Mason	2100-2210	Overcast, 60°F, wind 0-2 mph/waxing crescent
May 23, 1999	Scott Taylor Greg Mason	2100-2230	Clear, 59°F, wind 0-3 mph/waxing gibbous
May 25, 1999	Greg Mason	2130-2300	Overcast, 60°F, wind 0-1 mph/waxing gibbous
April 4, 2002	Justin Fischbeck Julia Auckland	1945-2150	Partly cloudy, 56-60°F, wind 0-2 mph/waning gibbous
April 11, 2002	Justin Fischbeck Julia Auckland	2015-2215	Cloudy, 63-64°F, no wind/waning crescent
April 18, 2002	Justin Fischbeck Julia Auckland	2015-2130	Partly cloudy, 56-59°F, wind 0-1 mph/waxing crescent
May 6, 2002	Justin Fischbeck Julia Auckland	2015-2225	Cloudy, 60-62°F, wind 0-1 mph/waning crescent
May 14, 2002	Justin Fischbeck Julia Auckland	2100-2252	Cloudy, 62°F, wind 0-2 mph/waxing crescent
June 6, 2002	Justin Fischbeck Julia Auckland	2045-2215	Cloudy, 66°F, wind 0-3 mph/waning crescent

During nocturnal site visits, surveyors walked along Buena Vista Creek, pausing frequently to listen for calling arroyo toads and using flashlights to detect toad eye shine. To avoid impacting toads and their habitat, surveyors walked along trails directly adjacent to the habitat when possible. Survey effort was focused more on areas determined during the initial assessment to have high arroyo toad potential. No site visits were performed within 3 days of a full moon. Weather conditions were favorable during all site visits and above the protocol-recommended minimum dusk temperature of 55˚F.

2.3.7 Southwestern Pond Turtle

HELIX conducted a focused survey for the southwestern pond turtle (*Actinemys marmorata pallida*) in 2000. The survey consisted of visually scanning the pond areas in the northwestern portion of the site for evidence of pond turtles. Because turtles are reclusive and will dive under water when approached, the survey was conducted from a distance with the aid of binoculars. Additionally, Buena Vista Creek has been surveyed opportunistically for pond turtles during the 2010 and 2011 surveys for other species, as well as during the monitoring of the grading for the quarry reclamation effort.

2.4 NOMENCLATURE

Nomenclature for this report is taken from Holland (1986) and Oberbauer (2008) for vegetation communities; and Hickman, ed. (1993) for plants. Additional references include Heath (2004) for butterflies, Collins and Taggart (2011) for reptiles, American Ornithologists' Union (2009) for birds, and Baker, et al. (2003) for mammals. Plant species status is taken from the CNPS (2011). Animal species status is taken from the CDFG CNDDB (2011).

3.0 EXISTING CONDITIONS

3.1 VEGETATION COMMUNITIES

The Carlsbad HMP (City of Carlsbad 2004) also divides vegetation communities into 6 Habitat Groups (A through F).

Carlsbad Habitat Group	Habitat Type and Description
A	Coastal salt marsh, alkali marsh, freshwater marsh, estuarine, salt pan/mudflats, riparian forest, riparian woodland, riparian scrub, vernal pools, disturbed wetlands, flood channel, freshwater Engelmann oak woodland, coast live oak woodland
B	Beach, southern coastal bluff scrub, maritime succulent scrub, southern maritime chaparral, native grassland
C	Gnatcatcher-occupied coastal sage scrub
D	Unoccupied coastal sage scrub, coastal sage/chaparral mix, chaparral (excluding southern maritime chaparral)
E	Annual (non-native) grassland
F	Disturbed land, eucalyptus, agricultural lands

Seventeen vegetation communities occur within the Quarry Creek Reclamation project area, including: Southern cottonwood willow riparian forest, southern willow scrub, freshwater marsh, mule fat scrub, riparian woodland, baccharis scrub, non vegetated channel/streambed, open water, coastal sage chaparral scrub, Diegan coastal sage scrub (including disturbed), southern mixed chaparral, non-native grassland (including disturbed), eucalyptus woodland, non-native vegetation, disturbed habitat, and developed land (Figure 5; Table 5). The riparian habitat creation will be comprised of a mix of the existing riparian habitats that currently occur on site. A brief description of each community within the Quarry Creek Project area is provided below.

Table 5
EXISTING VEGETATION COMMUNITIES WITHIN THE QUARRY CREEK PROJECT[1]

VEGETATION COMMUNITY	ACREAGE		
	Existing	Creation/Restoration	Total
Riparian forest (61330)	9.39		9.39
Southern riparian woodland (62000)	1.34		1.34
Riparian habitat[2]	0	1.94	1.94
Southern willow scrub (63320)	1.34		1.34
Freshwater marsh (52400)	0.46		0.46
Mule fat scrub (63310)	0.43		0.43
Non vegetated channel/streambed	1.29		1.29
Disturbed wetland	0.01		0.01
Open water	0.38		0.38
Coastal sage chaparral scrub (37GOO)	0.4		0.4
Diegan coastal sage scrub (32500)	37.8	5.1	42.9
Baccharis scrub (32530)	6.2		6.2
Southern mixed chaparral (37120)	5.1		5.1
Native grassland(42100)	0.3		0.3
Non-native grassland (42200)	34.6		34.6
Eucalyptus woodland (79000)	0.1		0.1
Non-native vegetation (11000)	0.4		0.4
Disturbed habitat (11300)	16.5		16.5
Developed (12000)	33.5		33.5
TOTAL	**149.54**	**7.04**	**156.58**

[1]Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008)
[2]Riparian habitat creation will be comprised of one or more of the other riparian vegetation communities present on site.

3.1.1 Riparian Forest

Riparian forest consists of tall, open, broad-leaved, winter-deciduous riparian species and is dominated by cottonwood species (e.g., *Populus* spp.) with willow species (*Salix* spp.) comprising the main understory. This vegetation community is dense, structurally diverse, and similar to southern arroyo willow riparian forest, although it contains a greater amount of cottonwoods and western sycamores (*Platanus racemosa*). On site, this habitat also contains non-native species such as castor bean (*Ricinus communis*), and fan palm (*Washingtonia* sp.) that will be removed as part of the quarry reclamation effort.

Approximately 9.39 acre of southern cottonwood riparian forest occurs within the northwestern portion of the site.

- Project Boundary
- Hp Palmer's Grapplinghook *(Harpagonella palmeri)*
- CAGN Coastal California Gnatcatcher *(Vireo bellii pusillus)*
- LBV Least Bell's Vireo *(Vireo bellii pusillus)*
- Freshwater Marsh
- Mule Fat Scrub
- Southern Willow Scrub
- Southern Riparian Woodland
- Southern Riparian Forest
- Riparian Creation/Restoration
- Baccharis Scrub
- Disturbed Wetland
- Streambed
- Native Grassland
- Diegan Coastal Sage Scrub
- Diegan Coastal Sage Scrub Creation/Restoration
- Coastal Sage Chaparral Scrub
- Southern Mixed Chaparral
- Non-native Grassland
- Eucalypyus Woodland
- Non-native Vegetation
- Open Water
- Disturbed Habitat
- Developed

Vista Way
78
Haymar Drive
Buena Vista Creek
Marron Road
Simsbury Court
Tamarack Avenue
Vancouver Street
Carlsbad Village Drive
CAGN
LBV
Hp 1000
Hp 200
Hp 100
Hp 50
Hp 30
Hp 20

N
W E
S
400 200 0 400
Feet
Job No: MMC-40 Date: 03/27/12

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Vegetation/Sensitive Resources

QUARRY CREEK MASTER PLAN

HELIX Environmental Planning

Figure 5

3.1.2 Southern Riparian Woodland

Southern Riparian Woodland is tall, open, streamside communities dominated by facultative riparian trees that typically require water near the soil surface. This habitat on site includes arborescent and shrubby willows in association with mule fat (*Baccharis salicifolia*) and other riparian species.

Approximately 1.34 acres of southern riparian woodland occur along the south-north trending drainage in the south-central portion of the site.

3.1.3 Southern Willow Scrub

Southern willow scrub is a sensitive riparian vegetation community consisting of dense, broad-leaved, winter-deciduous stands of trees dominated by shrubby willows in association with mule fat. This habitat typically occurs on loose, sandy, or fine gravelly alluvium deposited near stream channels during flood flows.

Dominant willow species in the southern willow scrub in the study area include arroyo willow (*Salix lasiolepis*) and red willow (*S. laevigata*). In addition, on-site southern willow scrub supports black willow (*S. gooddingii*), mule fat, Fremont cottonwood (*Populus fremontii*), and western ragweed (*Ambrosia psilostachya*). The on-site southern willow scrub has a large component of non-native plant species, including castor bean, giant reed (*Arundo donax*), bristly ox-tongue (*Picris echioides*), and California fan palm (*Washingtonia filifera*) that will be removed as part of the quarry reclamation effort.

Approximately 1.34 acre of southern willow scrub occurs at scattered locations across the site.

3.1.4 Riparian Habitat

Areas along Buena Vista Creek that are being restored to riparian vegetation as part of the quarry reclamation project were labeled “riparian habitat” as a general term, given that the actual habitat that will be restored isn’t known at this time. It is anticipated that these areas will be a combination of southern willow scrub and riparian forest habitats.

Approximately 1.94 acres of riparian habitat occurs along Buena Vista Creek.

3.1.5 Freshwater Marsh

Freshwater marsh is characterized by perennial monocots, such as cattail (*Typha latifolia*) or bulrush (*Scirpus* sp.). This vegetation community occurs in low, regularly flooded areas with little current. Vegetation in this community typically forms dense, monotypic stands. Freshwater marsh on the project site is almost entirely dominated by cattail.

Approximately 0.46 acre of freshwater marsh occurs along Buena Vista Creek.

3.1.6 Mule Fat Scrub

Mule fat scrub is a depauperate, shrubby riparian scrub community dominated by mule fat and interspersed with small willows. This vegetation community occurs along intermittent stream channels with a fairly coarse substrate and moderate depth to the water table. This early seral community is maintained by frequent flooding, the absence of which would lead to a cottonwood or sycamore dominated riparian woodland or forest. In some environments, limited hydrology may favor the persistence of mule fat.

Approximately 0.43 acres of mule fat scrub occurs as a mostly monotypic stand of mule fat at the southwestern edge of the project site.

3.1.7 Baccharis Scrub

Baccharis scrub is dominated by *Baccharis* species and typically occurs in low-lying areas. This vegetation community is known as a secondary pioneer plant in communities such as coastal sage scrub and chaparral. On site, baccharis scrub is dominated by coyote bush (*Baccharis pilularis*).

Approximately 6.2 acre of baccharis scrub occurs adjacent to the drainage that runs southeast-northwest in the central portion of the panhandle.

3.1.8 Non-vegetated Channel/Streambed

Portions of Buena Vista Creek (drop structures) and other side drainages are not vegetated and are thus considered to be non-vegetated channel/streambed.

Approximately 1.29 acre of non-vegetated channel/streambed occurs on-site.

3.1.9 Open Water

Two open water ponds occur on site in the northwestern portion of the project site and total approximately 0.38 acre.

3.1.10 Coastal Sage-Chaparral Scrub

Coastal sage-chaparral scrub is a mixture of sclerophyllous chaparral shrubs and drought-deciduous sage scrub species regarded as an ecotone (transition) between 2 vegetation communities. This singular community contains floristic elements of both communities such as California sagebrush, California buckwheat, laurel sumac (*Malosma laurina*), toyon (*Heteromeles arbutifolia*), and lemonadeberry (*Rhus integrifolia*). This community varies in species composition but always contains coastal sage and chaparral species.

Approximately 0.4 acre of coastal sage-chaparral scrub occurs within the central portion of the panhandle.

3.1.11 Diegan Coastal Sage Scrub (including disturbed)

Diegan coastal sage scrub is one of the 2 major shrub types that occur in southern California, occupying xeric sites characterized by shallow soils (the other is chaparral). Shrubs within this community are generally drought-deciduous species with open canopies.

Diegan coastal sage scrub on site occurs in somewhat disturbed remnant patches within the hard rock quarry operation and along its edges and on portions of the panhandle. These patches contain native coastal sage scrub species such as California buckwheat (*Eriogonum fasciculatum*) and California sagebrush (*Artemisia californica*), and non-native species such as mustard (*Brassica* sp.) and tree tobacco (*Nicotiana glauca*). Other areas where coastal sage scrub is present include the revegetated cut slopes in the southern portion of the site that contains mostly small and sparse California buckwheat, and the slope in the west-central portion of the site that is dominated by dense lemonadeberry (*Rhus integrifolia*). Diegan coastal sage scrub occurs primarily in the northwestern portion of the site, in the panhandle, and along the north-facing slope along the southern property boundary.

Approximately 42.9 acres of Diegan coastal sage scrub (including disturbed) occur within the Quarry Creek Project. On site, this community consists of 27.7 acres of existing Diegan coastal sage scrub, 10.1 acres of disturbed Diegan coastal sage scrub, and 5.1 acres of creation. An additional 0.5 acre occurs within off-site impact areas.

3.1.12 Southern Mixed Chaparral

Southern mixed chaparral is composed of broad-leaved sclerophyllous shrubs that are generally deep rooted and can grow to about 15 feet tall. It forms dense, often impenetrable stands on dry, rocky, north-facing slopes. Southern mixed chaparral occurs on the slope along the southern project boundary within the City and is dominated by chamise (*Adenostoma fasciculatum*), with lesser amounts of mission manzanita (*Xylococcus bicolor*) and holly-leaf redberry (*Rhamnus ilicifolia*).

Approximately 5.1 acre of southern mixed chaparral occurs along the north-facing slope along the southern property boundary.

3.1.13 Native Grassland (including disturbed)

Native grassland habitat is comprised of a mix of native and non-native grasses, herbs, and forbs, comprised of at least 20 percent native species, including needle grass (*Nasella* spp.), blue eyed grass (*Sisirynchium* sp.), Poppy (*Eschscholzia* spp.), or goldfield (*Lasthenia* spp.), are present.

Approximately 0.3 acres of native grassland (including 0.2 acre disturbed) occur in the eastern portion of the panhandle.

3.1.14 Non-native Grassland (including disturbed)

Non-native grassland is a dense to sparse cover of annual grasses, often associated with native annual forbs. This vegetation community occurs on gradual slopes with deep, fine-textured, usually clay soils. Most of the annual introduced species that comprise non-native grassland originated from the Mediterranean region of Europe, an area with a climate similar to that in California and a long history of agriculture. These 2 factors have contributed to the successful invasion and establishment of these species and the replacement of native grasslands with an annual dominated non-native grassland (Jackson 1985). Typical invasive species such as black mustard (*Brassica nigra*), foxtail chess (*Bromus madritensis* ssp. *rubens*), and common ripgut grass (*B. diandrus*) are common within the non-native grassland. Disturbed non-native grassland has sufficient cover by grasses to be considered grassland, but has a higher proportion of non-native forbs.

Approximately 34.6 acres of non-native grassland (including 0.1 acre disturbed) occur primarily in the panhandle.

3.1.15 Eucalyptus Woodland

Eucalyptus woodland is dominated by eucalyptus (*Eucalyptus* sp.), an introduced species that has often been planted for wind blocking, ornamental, or hardwood production purposes. Most groves are monotypic and the understory within well-established groves is usually sparse due to the allelopathic nature of the abundant leaf and bark litter. If sufficient moisture is available, this species becomes naturalized and is able to reproduce and expand its range. The sparse understory offers only limited wildlife habitat; however, these woodlands provide excellent nesting sites for a variety of raptors.

Approximately 0.1 acre of eucalyptus woodland occurs within the Quarry Creek Project.

3.1.16 Non-native Vegetation

Non-native vegetation is defined as areas of cultivated or landscaping plants that have naturalized into otherwise native habitat areas or that are remnant of previous cultivated land uses. Such plants occur without supplemental irrigation and may spread, supplanting native plant species.

Approximately 0.4 acre of non native vegetation occurs along the northern boundary of the site. An additional 0.02 acre occurs within off-site impact areas.

3.1.17 Disturbed Habitat

Disturbed habitat consists of land that has experienced prior grading, dumping, or other human activity and provides virtually no wildlife value. It supports limited vegetation, generally non-native annual forbs and some grasses. Disturbed habitat on site occurs in areas showing evidence of past mining activity.

Approximately 16.5 acres of disturbed habitat occurs within the Quarry Creek Project. An additional 0.7 acre occurs within off-site impact areas.

3.1.18 Developed Land

Developed land occurs where permanent structures and/or pavement have been placed, or where landscaping is clearly tended and maintained, preventing the growth of native vegetation. Developed land occurs over the entire portion of the site that is being reclaimed following quarrying operations, with the exception of the Buena Vista Creek channel and side slopes that are being revegetated.

Approximately 33.5 acres of developed land occur on-site. An additional 1.6 acres occurs within off-site impact areas.

3.2 JURISDICTIONAL AREAS

3.2.1 U.S. Army Corps of Engineers

Within the study area, Corps jurisdictional areas occur along Buena Vista Creek, on a south-north tributary drainage in the south-central portion of the site, and a southeast-northwest trending drainage in the panhandle that includes several subdrainages. Buena Vista Creek supports high quality riparian habitat throughout its length (following restoration). The south-north drainage is fed by urban runoff and terminates at the outfall structure just south of the project boundary. The third drainage is part of a larger tributary area heading off site to the south. As noted in the methods section, the area in the northwestern portion of the site was not delineated but does contain Corps jurisdictional areas. A total of 2.8 acres of Corps jurisdictional wetlands occur within the project area, including 0.14 acre of southern riparian forest, 0.62 acre of southern willow scrub, 0.1 acre of freshwater marsh, and 1.94 acres of riparian habitat creation/restoration. Additionally, 2.21 acre of Corps jurisdictional non-wetland WUS consisting of non-vegetated channel occur on site (Figure 6).

3.2.2 California Department of Fish and Game

The study area supports 6.78 acres of CDFG jurisdictional areas, including 0.14 acre of southern riparian forest, 1.34 acres of southern riparian woodland, 1.01 acres of southern willow scrub, 0.1 acre of freshwater marsh, 0.43 acre of mule fat scrub, 0.01 acre of disturbed wetland, 1.79 acres of streambed, 1.94 acres of riparian habitat creation/restoration, and 0.02 acre of non-native vegetation (Figure 7). California Department of Fish and Game jurisdiction includes all areas under Corps jurisdiction, as well as other areas with wetland or riparian vegetation that might not have wetland hydrology or hydric soils.

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Corps Jurisdictional Areas

QUARRY CREEK MASTER PLAN

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Figure 6

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CDFG Jurisdictional Areas

QUARRY CREEK MASTER PLAN

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Figure 7

3.3 PLANTS

A total of 109 plant species were observed during biological investigations of the study area were recorded and are included in Appendix A. The majority of observed plants were non-native, and none was listed. One sensitive plant, Palmer's grapplinghook (*Harpagonella palmeri*), was observed during surveys conducted in 2008 and 2011. Table 6 includes sensitive plant species assessed for potential to occur within the study area.

Palmer's grapplinghook (*Harpagonella palmeri*)
Listing: --/--; CNPS List 4.2
Distribution: Below approximately 3,300 feet in elevation in Los Angeles, Orange, Riverside, and San Diego counties; Baja California and Sonora, Mexico; San Clemente Island; Arizona
Habitat: Clay soils in annual grasslands and coastal sage scrub
Status on site: Approximately 1,600 individuals were observed in 2008, and 2,750 individuals were observed in 2011 in the western portion of the site (Figure 5)

Table 6
LISTED OR SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR

SPECIES	STATUS*	POTENTIAL TO OCCUR ON SITE
San Diego thornmint (*Acanthomintha ilicifolia*)	FE/SE CNPS List 1B.1 MHCP Covered, Carlsbad Narrow Endemic	High. Grassy openings in chaparral or sage scrub, with friable or broken clay soils being the preferred habitat. Clay soils present in panhandle area of site. Not observed during project surveys and therefore not expected.
San Diego ambrosia (*Ambrosia pumila*)	FE/-- CNPS List 1B.1 MHCP Covered, Carlsbad Narrow Endemic	Low. No known populations in project vicinity.
Coastal dunes milk-vetch (*Astragalus tener* var. *titi*)	FE/SE CNPS List 1B.1 CA Endemic	None. Occurs in coastal dune situations, which do not occur on site.
Thread-leaved brodiaea (*Brodiaea filifolia*)	FT/SE CNPS List 1B.1 CA Endemic Carlsbad Narrow Endemic	High. Prefers clay soils, which are present in panhandle area of site. Not observed during focused surveys and therefore not expected.

Table 6 (cont.)
LISTED OR SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR

SPECIES	STATUS*	POTENTIAL TO OCCUR ON SITE
Orcutt's brodiaea (*Brodiaea orcuttii*)	--/-- CNPS List 1B.1 MHCP Covered, Carlsbad Narrow Endemic	Moderate. Clay soils on site could support this species. Not observed during focused surveys and therefore not expected.
Smooth tarplant (*Centromadia pungens* ssp. *laevis*)	--/-- CNPS List 1B.1 CA Endemic	Very low. Occurs in grasslands, meadows, and alkali meadows. A single specimen has been collected in Oceanside, but all other observations are from sites well northeast of the project vicinity. Soils not appropriate.
Orcutt's pincushion (*Chaenactis glabruiscula* var. *orcuttiana*)	--/-- CNPS List 1B.1	Very low. Occurs in open, sandy coastal sage scrub and coastal bluff scrub. Site is likely too far inland to support this species. Habitat on site is only marginally suitable.
Summer holly (*Comarostaphylos diversifolia*)	--/-- CNPS List 1B.2 MHCP Covered	Low. Would have been observed within on-site southern mixed chaparral if present.
Sea dahlia (*Coreopsis maritime*)	--/-- CNPS List 2.2	None. Occurs on sandstone within coastal bluff scrub or coastal sage scrub near the ocean. Site is likely too far inland, and habitat on site is not suitable to support this species.
Blochman's dudleya (*Dudleya blochmaniae* ssp. *blochmaniae*)	--/-- CNPS List 1B.1 MHCP Covered Carlsbad Narrow Endemic	Very low. Occurs in coastal bluff scrub and coastal sage scrub or open chamise chaparral near the ocean. Site is likely too far inland to support this species.
Sticky dudleya (*Dudleya viscida*)	--/-- CNPS List 1B.2 CA Endemic MHCP Covered	Low. Occurs in chaparral and mesic coastal sage scrub on north-facing slopes. Not reported in the project vicinity.
Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*)	--/-- CNPS List 1B.1	None. Occurs in salt marsh communities near the coast, as well as on the periphery of vernal pools. Suitable habitat does not occur on site.
Nuttall's lotus (*Lotus nuttalianus*)	--/-- CNPS List 1B.1 MHCP Covered	None. Occurs on coastal dunes and in coastal sage scrub with sandy or riverwash soils. Coastal sage scrub on site is not suitable to support this species.
San Diego goldenstar (*Muilla clevelandii*)	--/-- CNPS List 1B.1 Carlsbad Narrow Endemic	Moderate. Occurs in clay soils which are present in the panhandle portion of the site. Not observed during focused surveys and therefore not expected.

Table 6 (cont.) **LISTED OR SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR**		
SPECIES	**STATUS***	**POTENTIAL TO OCCUR ON SITE**
Coast woolly-heads (*Nemacaulis denudata* var. *denudata*)	--/-- CNPS List 1B.2	None. Occurs in coastal dune communities, which do not occur on site.
Parry's tetracoccus (*Tetracoccus dioicus*)	--/-- CNPS List 1B.2 MHCP Covered	Very low. Typically occurs in chaparral. Plant is a shrub and would have been detected if present.

*Refer to Appendix C for a listing and explanation of status and sensitivity codes

3.4 ANIMALS

A total of 72 animal species (including 2 listed species) were observed/detected within the project boundaries and include: 13 butterfly, 1 amphibian, 1 reptile, 46 bird, and 4 mammal species (Appendix B). The listed species observed are least Bell's vireo and coastal California gnatcatcher and are discussed later in this document (Section 4.3). Animal species detected during biological surveys are included in Appendix B. Nine animal species observed on site are considered sensitive: orange-throated whiptail (*Aspidoscelis hyperythrus beldingi*), least Bell's vireo, coastal California gnatcatcher, white-tailed kite (*Elanus leucurus*), yellow warbler (*Dendroica petechia brewsteri*), northern harrier (*Circus cyaneus*), yellow-breasted chat (*Icteria virens*), Red-shouldered hawk (*Buteo lineatus*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*; Figure 5). Additionally, Cooper's hawk (*Accipiter cooperii*), and grasshopper sparrow (*Ammodramus savannarum*) were observed off-site to the west. The results of focused surveys for the southwestern willow flycatcher, burrowing owl, and arroyo toad were negative. Additionally, directed surveys for southwestern pond turtle were negative.

Least Bell's vireo (*Vireo bellii pusillus*)
Status: FE, BCC/SE, MHCP Covered, HMP Covered
Distribution: Observed throughout much of San Diego County in the breeding season but in smaller numbers in foothills and mountains
Habitat(s): Mature riparian scrub and woodland
Status on site: One individual observed in the southern riparian forest at the western edge of the project site, and one individual was heard off-site to the north of the panhandle (Figure 5).

Coastal California gnatcatcher (*Polioptila californica californica*)
Status: FT/SSC; MHCP Covered, HMP Covered
Distribution: In San Diego County, occurs throughout coastal lowlands
Habitat(s): Coastal sage scrub
Status on site: 10 pairs of gnatcatchers were observed on site at various locations (Figure 5).

Red-shouldered hawk (*Buteo lineatus*)
Status: --/--;
Distribution: In San Diego County, observed throughout coastal slope
Habitat(s): Riparian woodland, oak woodland, orchards, eucalyptus groves, or other areas with tall trees
Status on site: Observed flying over southern and western portions of site.

Northern harrier (*Circus cyaneus*)
Status: --/SSC; MHCP Covered
Distribution: In San Diego County, distribution primarily scattered throughout lowlands but can also be observed in foothills, mountains, and desert
Habitat(s): Open grassland and marsh
Status on site: Observed flying over site.

Yellow-breasted chat (*Icteria virens*)
Status: --/SSC; MHCP Covered, HMP Covered
Distribution: Occurs throughout San Diego County's coastal lowlands in the breeding season
Habitat(s): Mature riparian woodland
Status on site: Observed in and adjacent to the riparian habitat on the western portion of the property during multiple surveys in 2005, 2008, and 2011.

Yellow warbler (*Dendroica petechia brewsteri*)
Status: --/SSC;
Distribution: Observed throughout much of San Diego County during the breeding season with rare sightings in winter
Habitat(s): Riparian woodland
Status on site: Observed in the riparian habitat near the western edge of the property.

Orange-throated whiptail (*Aspidoscelis hyperythrus beldingi*)
Listing: --/SSC, MHCP Covered, HMP Covered
Distribution: Southern Orange County and southern San Bernardino County, south through Baja California
Habitat: Coastal sage scrub, chaparral, edges of riparian woodlands, and washes. Also found in weedy, disturbed areas adjacent to these habitats. Important habitat requirements include open, sunny areas, shaded areas, and abundant insect prey base, particularly termites (*Reticulitermes* sp.).
Status on site: Observed in sage scrub in western portion of the site.

White-tailed kite (*Elanus leucurus*)
Listing: --/--
Distribution: Breeds in the Pacific U.S. Winters in South America as far south as Chile
Habitat: Nesting typically occurs in riparian or oak woodlands adjacent to grasslands where small mammals are hunted
Status on site: Three individuals were observed once near the pond in the north-central portion of the site in 2003; one individual was observed in southern willow scrub near the western property boundary in 1999.

San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
Listing: --/SSC
Distribution: Southern Santa Barbara County to San Quintin, Baja; localities on the eastern edge of its range include Jacumba and San Felipe Valley in San Diego County
Habitat: Occurs primarily in open habitats, including coastal sage scrub, chaparral, grasslands, croplands, and open, disturbed areas if there is at least some shrub cover present
Status on site: Observed at 2 locations within non-native grassland in the western portion of the site.

Listed or sensitive animal species with potential to occur within the Quarry Creek Project are listed in Table 7. The species are grouped into invertebrates, fish, amphibians, reptiles, birds, and mammals, then alphabetized (by scientific name).

Table 7
LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR

SPECIES	STATUS*	POTENTIAL TO OCCUR ON SITE
INVERTEBRATES		
Butterflies		
Quino checkerspot butterfly (*Euphydryas editha quino*)	FE/-- MHCP Covered	None. Larval host plant, dot-seed plantain (*Plantago erecta*) not observed on site. No recent observations in northwestern San Diego County.
Hermes Copper (*Lycaena hermes*)	--/-- MHCP Covered Carlsbad Narrow Endemic	Very low. Southern mixed chaparral and coastal sage scrub with mature specimens of its larval host plant, spiny redberry (*Rhamnus crocea*). No redberry on site.
VERTEBRATES		
Amphibian		
Arroyo toad (*Bufo californicus*)	FE/-- MHCP Covered	None. Prefers riparian areas with open canopy and slow-moving water. Was not detected during previous focused surveys.
Reptiles		
Silvery legless lizard (*Anniella pulchra pulchra*)	--/SSC	Low to moderate. Prefers fine, sandy soils, which are not prevalent on site.
Southwestern pond turtle (*Clemmys marmorata pallida*)	--/SSC MHCP Covered	Low. Focused surveys did not observe this species. Almost entirely aquatic; occurs in freshwater marshes, creeks, ponds, rivers and streams, particularly where basking sites, deep water retreats, and egg laying areas are readily available.

Table 7 (cont.) **LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**		
SPECIES	**STATUS***	**POTENTIAL TO OCCUR ON SITE**
VERTEBRATES (cont.)		
Reptiles (cont.)		
Coastal whiptail (*Cnemidophorus tigris stejnegeri*)	--/SSC	Moderate. Occurs in grassland and coastal sage scrub habitats, which are found on site.
Red-diamond rattlesnake (*Crotalus exsul*)	--/SSC	Low to moderate. Common species in coastal sage scrub, typically in vicinity of rock outcrops. Appropriate habitat limited on site.
Coronado Island skink (*Eumeces skiltonianus interparietalis*)	--/SSC	Moderate. Found in coastal sage scrub and areas with sufficient leaf litter to provide shelter.
Coastal rosy boa (*Lichanura trivirgata*)	--/SSC	Low to moderate. Commonly occurs in coastal sage scrub with rock outcrops, which is limited on site.
Coast horned lizard (*Phrynosoma coronatum*)	--/SSC MHCP Covered	Moderate. Favored prey harvester ants (*Pogonomyrmex* sp.) likely present.
Coast patch-nosed snake (*Salvadora hexalepis virgultea*)	--/SSC	Moderate. Found among preferred habitats of whiptails, its favored prey.
Birds		
Cooper's hawk (*Accipiter cooperii*)	--/SSC MHCP Covered HMP Covered	High. Observed off site to west along Buena Vista Creek, may forage in open areas on site.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	--/SSC MHCP Covered HMP Covered	Low. Found in coastal sage scrub. Would likely have been observed if present.
Grasshopper sparrow (*Ammodramus savannarum*)	--/SSC MHCP Covered	High. Restricted to grasslands (particularly native) dominated by bunchgrasses (*Nassella* spp.). Non-native grassland is abundant in the western portion of the site; however, this species was not detected during the many surveys of the site. Reported in similar habitat off site to the west.

Table 7 (cont.) **LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**		
SPECIES	**STATUS***	**POTENTIAL TO OCCUR ON SITE**
VERTEBRATES (cont.)		
Birds (cont.)		
Bell's sage sparrow (*Amphispiza belli belli*)	--/SSC MHCP Covered	Low. Found in coastal sage scrub and chaparral. Would have been observed if present on site.
Burrowing owl (*Athene cunicularia*)	--/SSC MHCP Covered	Not expected. Prefers grassland and agricultural lands, where it inhabits ground squirrel burrows. Would likely have been detected if present. Was not observed during focused surveys
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE/SE MHCP Covered HMP Covered	Low to not expected. Nests in tall, dense riparian vegetation. Focused surveys would have detected this species if present. Not observed during focused surveys
Mammals		
San Diego pocket mouse (*Chaetodipus fallax fallax*)	--/SSC MHCP Covered	Low. Prefers open, sandy land with weeds, which occurs on site but in very small patches.
San Diego desert woodrat (*Neotoma lepida intermedia*)	--/SSC	Low. Nests typically observed if present but may have been missed in heavily vegetated areas.
Southern grasshopper mouse (*Onychomys torridus ramona*)	--/SSC MHCP Covered	Low. Typically found in more arid habitats than those found on site.
Pacific pocket mouse (*Perognathus longimembris pacificus*)	FE/-- MHCP Covered Oceanside Narrow Endemic	Very low. Site too far inland and does not support suitable habitat.

*Refer to Appendix C for a listing and explanation of status and sensitivity codes

3.5 WILDLIFE CORRIDORS

Wildlife corridors connect otherwise isolated pieces of habitat and allow movement or dispersal of plants and animals. Local wildlife corridors allow animals access to resources such as food, water, and shelter within the framework of their daily routine. For example, animals can use these corridors to travel between their riparian breeding habitats and their upland burrowing habitats. Regional corridors provide these functions over a larger scale and link 2 or more large habitat areas, allowing the dispersal of organisms and the consequent mixing of genes between populations.

3.5.1 Local Corridors

Buena Vista Creek within the central and eastern portions of the site has been heavily degraded by the quarry operation over the years, and is currently being restored to high quality wetland and upland habitat, increasing its value as a local wildlife corridor. The creek becomes heavily constrained upstream of College Boulevard and wildlife movement to the east along Buena Vista Creek has very limited value. The south-north trending drainage in the south-central portion of the site has also been heavily impacted by the quarry operation. Wildlife movement is most likely to occur to and from the western portion of the site to the undeveloped lands to the west and south, and to some degree to the slopes to the southeast.

3.5.2 Regional Corridors

The MHCP (AMEC et al. 2003) places portions of the area westerly of the site within the Biological Core and Linkage Area, which contains "all large contiguous areas of habitat, all areas supporting major and critical species populations or habitat areas, and all important functional linkages and movement corridors between them" within the MHCP (p. 2-21). The generalized boundaries of this regional corridor are shown to connect with open space through the southwestern portion of the property between land to the south, and ultimately with the stepping stone linkage through Oceanside north of SR 78. The preserve system generally includes areas within the south slopes and along Buena Vista Creek, with connections to the west. The areas further to the west are identified in the Carlsbad HMP (City of Carlsbad 2004) as a core habitat area and are connected with Buena Vista Lagoon to the west, although this connection is heavily constrained by SR 78 and existing shopping centers. Buena Vista Creek continues off site to the east through a constrained corridor. The area to the east is not considered a regional wildlife corridor.

4.0 REGIONAL AND REGULATORY CONTEXT

4.1 HMP

The project would be subject to regulation under the Carlsbad HMP (City of Carlsbad 2004). The Carlsbad HMP defines Hardline Preserve Areas intended to conserve sensitive habitats within an open space system. The entire project site includes designated Hardline Preserve Areas, as well as Hardline Development Areas. The objective of the Hardline Preserve through this area is to maintain the Buena Vista Creek channel through the central portion of the site, and to preserve the southeast-northwest trending drainage and adjacent upland areas in the panhandle.

4.2 FEDERAL ENDANGERED SPECIES ACT

Administered by the USFWS, the federal Endangered Species Act (ESA) provides the legal framework for the listing and protection of species that are identified as being endangered or threatened with extinction. Actions that jeopardize such species and their habitats are considered a "take" under the federal ESA. Two federally listed animal species were observed on site: least

Bell's vireo (endangered) and coastal California gnatcatcher (threatened). Protocol surveys for the southwestern willow flycatcher and arroyo toad (endangered) were negative.

Sections 7 and 10(a) of the federal ESA regulate actions that could harm or harass endangered or threatened species. Section 10(a) allows issuance of permits for "incidental" take of endangered or threatened species. The term "incidental" applies if the taking of the listed species is secondary to, and not the purpose of, an otherwise lawful activity. A conservation plan demonstrating how the take will be minimized and what steps taken would ensure the listed species' survival must be submitted for the issuance of Section 10(a) permits. Section 7 describes a process of federal interagency consultation for use when federal actions may adversely affect listed species. A biological assessment is required for any major activity if it may affect listed species. The HMP has been formally approved, which provides take authorization under Section 10(a).

4.3 MIGRATORY BIRD TREATY ACT

All migratory bird species that are native to the U.S. or its territories are protected under the Migratory Bird Treaty Act (MBTA), as amended under the MBTA of 2004 (FR Doc. 05-5127). The MBTA specifically prohibits the take of birds or bird nests. "Take" is defined in 50 CFR 10.12 as means to pursue or attempt to pursue to hunt, shoot, wound, kill, trap, capture, or collect. Only "collect" applies to nests (USFWS 2003). In common practice, USFWS places restrictions on disturbances allowed near active nests of raptors, such as red-tailed hawks and burrowing owls.

4.4 U.S. ARMY CORPS OF ENGINEERS

Impacts to all on-site WUS (including wetlands) are regulated by the Corps under Section 404 of the Clean Water Act (33 USC 1344) and would require a Corps permit. The type of permit required would depend on the amount of jurisdictional areas to be impacted. If the project would impact less than 0.5 acre of jurisdictional areas, it may qualify for a Nationwide Permit 39 under current regulations. Nationwide Permits are pre-issued permits for certain activities resulting in relatively small jurisdictional impacts. Implementation of the project would impact less than 0.5 acre of jurisdictional areas, but because the impacts significantly exceed the 300-foot threshold for linear impacts under Nationwide 39, an Individual Permit would be necessary, which would require a biological assessment, a detailed Section 404(b) alternatives analysis, an environmental assessment, and preparation of a mitigation/monitoring plan.

4.5 CALIFORNIA DEPARTMENT OF FISH AND GAME

The CDFG is responsible for issuing permits for impacts to state listed plant and animal species under the State ESA. The state listed endangered least Bell's vireo was observed along Buena Vista Creek on site. No southwestern willow flycatchers were observed during any survey of the site. The Carlsbad HMP has been formally approved, which provides take authorization for state listed species covered under the HMP.

The CDFG is also responsible for issuing permits for impacts to streambeds and wetlands under its jurisdiction, as described in Section 2.2.3 above. Any impacts to CDFG jurisdictional areas are regulated under California Fish and Game Code Section 1602 and will require a Streambed/Lake Alteration Agreement.

4.6 STATE WATER RESOURCES CONTROL BOARD

A State Water Resources Control Board (SWRCB) permit (401 Certification) is required under the Clean Water Act in association with the 404 Permit.

5.0 IMPACTS

The following section describes potential direct and indirect impacts associated with the project. Direct impacts are described based on the grading limits and associated brush management limits. Indirect impacts include project impacts such as noise and lighting that do not directly remove vegetation and sensitive resources, but may indirectly affect the long-term viability of sensitive species on site. The magnitude of an indirect impact can be the same as a direct impact; however, the effect usually takes a longer time to become apparent.

5.1 DIRECT IMPACTS

5.1.1 Vegetation Communities

Implementation of the proposed project would result in impacts to wetland resources, including 0.34 acre of southern riparian woodland, 0.06 acres of southern willow scrub, and 0.02 acre of mule fat scrub (Figure 8; Table 8). The proposed project also would impact 46.1 acres of upland vegetation communities, including 13.1 acres of Diegan coastal sage scrub (0.5 acre occurs off-site), 1.1 acres of baccharis scrub, 0.2 acre of native grassland, 0.2 acre of coastal sage chaparral scrub, 0.1 acre of southern mixed chaparral, 24.6 acres of non-native grassland, 6.3 acres of disturbed habitat (0.7 acre occurs off-site), 0.4 acre of non-native vegetation (0.02 acre occurs off-site), and 0.1 acre of eucalyptus woodland. The project would also "impact" 33.8 acres of developed land, including 1.6 acres in the City of Oceanside. Impacts to southern riparian woodland, southern willow scrub, mule fat scrub, unvegetated channel, Diegan coastal sage scrub, baccharis scrub, native grassland, coastal sage chaparral scrub, southern mixed chaparral, non-native grassland, and disturbed habitat would be considered significant and would require mitigation.

Table 8
SUMMARY OF IMPACTS TO VEGETATION COMMUNITIES WITHIN THE QUARRY CREEK PROJECT (acre[s])

VEGETATION COMMUNITY	HMP CODE	EXISTING*	ON SITE IMPACTS	OFF SITE IMPACTS	PRESERVATION
Riparian forest (61330)	A	9.39	0	0	9.39
Southern riparian woodland (62000)	A	1.34	0.34	0	1.00
Riparian habitat**	A	1.94	0	0	1.94
Southern willow scrub (63320)	A	1.34	0.06	0	1.28
Freshwater marsh (52400)	A	0.46	0	0	0.46
Mule fat scrub (63310)	A	0.43	0.02	0	0.41
Non vegetated channel/streambed	A	1.29	0	0	1.29
Disturbed wetland	A	0.01	0	0	0.01
Open water	A	0.38	0	0	0.38
Native grassland(42100)	B	0.3	0.2	0	0.1
Diegan coastal sage scrub (32500)	C	42.9	12.6	0.5	29.8+
Coastal sage chaparral scrub (37GOO)	D	0.4	0.2	0	0.2
Baccharis scrub (32530)	D	6.2	1.1	0	5.1
Southern mixed chaparral (37120)	D	5.1	0.1	0	5.0
Non-native grassland (42200)	E	34.6	24.6	0	10.0
Eucalyptus woodland (79000)	F	0.1	0.1	0	0

- Project Boundary
- Brush Managment
- Impacts
- Hp — Palmer's Grapplinghook *(Harpagonella palmeri)*
- CAGN — Coastal California Gnatcatcher *(Vireo bellii pusillus)*
- LBV — Least Bell's Vireo *(Vireo bellii pusillus)*
- Freshwater Marsh
- Mule Fat Scrub
- Southern Willow Scrub
- Southern Riparian Woodland
- Southern Riparian Forest
- Riparian Creation/Restoration
- Baccharis Scrub
- Disturbed Wetland
- Streambed
- Native Grassland
- Diegan Coastal Sage Scrub
- Diegan Coastal Sage Scrub Creation/Restoration
- Coastal Sage Chaparral Scrub
- Southern Mixed Chaparral
- Non-native Grassland
- Eucalypyus Woodland
- Non-native Vegetation
- Open Water
- Disturbed Habitat
- Developed

Vista Way
78
Haymar Drive
Buena Vista Creek
BRIDGE LOCATION
TRAIL LOCATION
TRAIL LOCATION
Marron Road
Simsbury Court
Tamarack Avenue
Vancouver Street
Carlsbad Village Drive
CAGN
LBV
Hp 1000
Hp 200
Hp 100
Hp 50
Hp 30
Hp 20

N
W E
S
400 200 0 400
Feet
Job No: MMC-40 Date: 10/04/12

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Vegetation and Sensitive Resources/Impacts

QUARRY CREEK MASTER PLAN

HELIX Environmental Planning

Figure 8

Table 8 (cont.) **SUMMARY OF IMPACTS TO VEGETATION COMMUNITIES WITHIN THE QUARRY CREEK PROJECT** (acre[s])					
VEGETATION COMMUNITY	**HMP CODE**	**EXISTING***	**ON SITE IMPACTS**	**OFF SITE IMPACTS**	**PRESERVATION**
Non-native vegetation (11000)	F	0.4	0.38	0.02	0
Disturbed habitat (11300)	F	16.5	5.6	0.7	10.20
Developed (12000)	N/A	35.12	32.2	1.6	1.3
TOTAL		**158.20**	**77.5**	**2.82**	**77.88**

*Includes on-site and off-site areas

+25.4 acres is available for project mitigation. The 5.1 acres of creation habitat was mitigation for the Reclamation Plan.

** Riparian habitat creation will be comprised of one or more of the other riparian vegetation communities present on site

5.1.2 Jurisdictional Areas

The proposed project would cause permanent and temporary impacts to both Corps and CDFG jurisdictional areas. The proposed project would cause permanent impacts to 0.21 acre of Corps jurisdictional areas consisting of unvegetated channel/streambed (Figure 9; Table 9). These impacts would be considered significant and would require mitigation.

Table 9 **IMPACTS TO CORPS JURISDICTIONAL AREAS***		
VEGETATION COMMUNITY*	**EXISTING***	**IMPACTS**
WETLANDS		
Southern riparian forest (61330)	0.14	0
Riparian habitat	1.94	0
Southern willow scrub (63320)	0.62	0
Freshwater marsh (52400)	0.1	0
NON-WETLAND WATERS		
Non vegetated channel/streambed	2.21	0.21
TOTAL	**5.01**	**0.21**

*All areas are presented in acre(s) rounded to the nearest 0.01

Impacts to CDFG jurisdictional areas would total 0.47 acres, including 0.34 acre of southern riparian woodland, 0.04 acres of southern willow scrub, 0.02 acre of mule fat scrub, and 0.07 acre of unvegetated channel/streambed (Figure 10; Table 10). These impacts would be considered significant and would require mitigation.

Table 10
IMPACTS TO CDFG JURISDICTIONAL AREAS*

VEGETATION COMMUNITY*	Existing*	Impacts
Southern riparian forest (61330)	0.14	
Southern riparian woodland (62000)	1.34	0.34
Riparian habitat	1.94	
Southern willow scrub (63320)	1.01	0.04
Freshwater marsh (52400)	0.1	
Disturbed wetland	0.01	
Mule fat scrub (63310)	0.43	0.02
Non vegetated channel/streambed	1.79	0.07
TOTAL	**6.76**	**0.47**

*All areas are presented in acre(s) rounded to the nearest 0.01

5.1.3 Sensitive Species

The proposed project would result in direct removal of habitat in which 7 coastal California gnatcatcher pairs were observed. One of the pair of gnatcatchers in the southeastern corner of the site has the potential to continue to use adjacent sage scrub. No direct take of habitat occupied by the least Bell's vireo will result from project implementation. Additionally, impacts to non-native grassland would impact foraging habitat for the one northern harrier and white-tailed kite, as well as habitat for 2 San Diego black-tailed jackrabbits. These impacts would be considered significant and would require mitigation. The project would also impact all of the approximately 2,750 Palmer's grapplinghook. This impact would be considered less than significant because Palmer's grapplinghook is a CNPS list 4.2 species and is not an HMP or MHCP narrow endemic.

5.1.4 Migratory Bird Treaty Act

Potential direct impacts to bird species covered under the MBTA could occur if brushing and grading occurs during the breeding season of most bird species (general breeding season is February 15 to August 15). These impacts are considered significant.

5.1.5 Regional Context/Wildlife Corridors

The original HMP showed the Hardline Preserve to the north of the existing alignment of Buena Vista Creek. This Hardline Preserve was based on the previously approved reclamation plan that showed the realignment of the creek to the north. Based on input from the USFWS, Corps, and

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Corps Jurisdictional Areas/Impacts

QUARRY CREEK MASTER PLAN

HELIX Environmental Planning

Figure 9

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CDFG Jurisdictional Areas/Impacts

QUARRY CREEK MASTER PLAN

HELIX Environmental Planning

Figure 10

CDFG, the Hardline Boundaries were amended through an Equivalency Finding, dated October 13, 2010, to allow for the existing Buena Vista Creek channel to be retained in its original location, the overall creek channel width was expanded, and 100-foot biological buffers were incorporated into the revised Hardline Boundary to maximize connectivity along Buena Vista Creek. The project proposes to grade within the first 20 feet of the biological buffer, which was specifically contemplated under the previous approvals for the reclamation project. The proposed project is consistent with this boundary.

The project proposes to construct a bridge across the riparian corridor to maintain wildlife movement along Buena Vista Creek at the western end of the widened riparian corridor (Figure 8), and no significant impacts to this local wildlife corridor would result from implementation of the proposed project.

The regional linkage that traverses the southwestern portion of the project is shown as Hardline Preserve in the HMP. The proposed project will expand this portion of the preserve by 8.1 acres (although there are minor encroachments into a portion of the corridor), resulting in a net improvement in regional connectivity for this portion of the HMP (Figure 11).

The existing Hardline Preserve narrows to approximately 85 feet at its narrowest point along the southern property boundary for a distance of approximately 890 feet. The project proposes to grade an approximate 300-foot linear distance of this pinch point and revegetate the slope with Diegan coastal sage scrub. The pinch point is then widened significantly along the western 500 feet by the project from 85 feet to approximately 300 feet in width, resulting in a net improvement in wildlife movement between the eastern open space parcel and the open space to the west. The project also proposes a trail through this area, although the trail is not expected to significantly impact wildlife movement.

The project as proposed results in an overall increase in wildlife movement functions over the current HMP Hardline Preserve.

5.2 INDIRECT IMPACTS

Many indirect impacts that may be caused by implementation of the proposed project are associated with edge effects. Edge effects occur when disturbance, development, or grading traverse an undeveloped area with substantial native lands surrounding the impact area. Edge effects include human activity, invasive plant species, nuisance animal species, animal behavioral changes, night lighting, decreased water quality, and roadkill. There will also be indirect impacts associated with the construction of the bridge across Buena Vista Creek in the form of habitat shading. Additionally, the proposed project has potential to cause temporary indirect impacts due to noise and fugitive dust.

5.2.1 Human Activity

Increases in human activity in an area often result in degradation of sensitive vegetation by further fragmenting habitat through creation of trails, removal of existing vegetation, and illegal dumping (landscape debris, trash, and other refuse). Human activity in the adjacent habitat is

proposed to be controlled by project fencing and monitoring and management requirements. Still, these impacts would be considered significant.

5.2.2 Invasive Plants

Invasive plants have potential to spread from developed or disturbed areas to adjacent native habitats. Such invasive species can displace native vegetation reducing the diversity of native habitats and potentially increasing flammability, changing ground and surface water levels, and adversely affecting native wildlife. Because no invasive plant species would be utilized in the landscaping plans, and no species on the Cal-IPC "Invasive Plant Inventory" list shall be included in the erosion control plan, impacts due to plant invasions are expected to be less than significant.

5.2.3 Nuisance Animal Species

Domesticated animals, particularly cats, are known to impact native wildlife in the habitat areas immediately adjacent to development. The proposed project has the potential to result in introduction of domestic animals to the surrounding habitat. Project fencing and the maintenance of healthy predator populations (coyote [*Canis latrans*] and bobcat [*Lynx rufus*]) will minimize introduction of domestic animals. Brown-headed cowbirds (*Molothrus ater*) are an invasive nest parasite that can greatly reduce the breeding success of native birds. This species has been reported on site and on the adjacent property to the west in low numbers (HELIX 2008b and 2008c; absent in 2011 [HELIX 2011b]), and the proposed project is not expected to significantly increase the number of brown-headed cowbirds in the surrounding habitat. In addition, residential uses may introduce Argentine ants (*Linepithema humile*) to local habitats, which could have significant consequences for native ant species and animals that feed on them. Impacts from Argentine ants will be avoided by requiring the inspection of all plant material prior to use on the site. Therefore, impacts associated with nuisance animal species are expected to be adverse but less than significant.

5.2.4 Night Lighting

Night lighting exposes wildlife species to an unnatural light regime and may alter their behavior patterns, causing them to have lower reproductive success, and thus reducing species diversity. All exterior lighting adjacent to preserved habitat including street lighting for Street A shall be limited to low pressure sodium sources of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat to the maximum extent practicable. Therefore, impacts due to night lighting would be considered less than significant.

5.2.5 Water Quality

Landscaping often results in increased runoff, which could in turn reduce water quality in riparian areas. The use of petroleum products (i.e., fuels, oils, lubricants) and erosion of land cleared during mine reclamation could potentially contaminate surface water, adversely affecting vegetation, aquatic animals, and terrestrial wildlife. However, implementation of BMPs per the City's grading permitting requirements, as well as installation of drainage and desiltation basins

- Project Boundary
- Existing Hardline
- Proposed Hardline
- Hardline Gains (12.45 acres)
- Hardline Losses (2.94 acres)
- Revegetation Slopes
- Hp Palmer's Grapplinghook *(Harpagonella palmeri)*
- CAGN Coastal California Gnatcatcher *(Vireo bellii pusillus)*
- LBV Least Bell's Vireo *(Vireo bellii pusillus)*
- Freshwater Marsh
- Mule Fat Scrub
- Southern Willow Scrub
- Southern Riparian Woodland
- Southern Riparian Forest
- Riparian Creation/Restoration
- Baccharis Scrub
- Disturbed Wetland
- Streambed
- Native Grassland
- Diegan Coastal Sage Scrub
- Diegan Coastal Sage Scrub Creation/Restoration
- Coastal Sage Chaparral Scrub
- Southern Mixed Chaparral
- Non-native Grassland
- Eucalypyus Woodland
- Non-native Vegetation
- Open Water
- Disturbed Habitat
- Developed

Vista Way
78
Haymar Drive
Buena Vista Creek
Marron Road
Tamarack Avenue
Simsbury Court
Vancouver Street
Carlsbad Village Drive
LBV
CAGN
Hp 1000
Hp 200
Hp 100
Hp 50
Hp 30
Hp 20

N
W E
S
400 200 0 400
Feet
Job No: MMC-40 Date: 10/04/12

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HMP Hardline Comparison

QUARRY CREEK MASTER PLAN

HELIX Environmental Planning

Figure 11

per the outlined in the Stormwater Management Plan would reduce potential short-term water quality impacts to below a level of significance.

During construction, measures would be implemented as part of the project to control erosion, sedimentation, and pollution that could impact water resources on and off site. Prior to the commencement of grading, a Notice of Intent must be filed with the RWQCB for a National Pollutant Discharge Elimination System General Construction Storm Water Permit. Specific permit requirements include implementation of an approved Storm Water Pollution Prevention Plan, which requires best management practices for erosion and sediment control related to construction activities. Standard measures that may apply to the proposed project include:

- Surface drainage will be designed to collect and move runoff into adequately sized natural stream channels or drainage structures.

- Erosion control measures associated with the project will include techniques for both long- and short-term erosion hazards pursuant to direction by a hydrologic or engineering consultant. These are likely to include such measures as the short-term use of gravelbags, matting, mulches, berms, hay bales, or similar devices along all pertinent graded areas to minimize sediment transport. The exact design, location, and schedule of use for such devices will be determined by a hydrologic or engineering consultant.

- Native vegetation will be preserved whenever feasible, and all disturbed areas will be stabilized as soon as possible after completion of grading. Native topsoil will be stockpiled and reapplied as part of the site revegetation whenever possible.

- Use of energy dissipating structures (e.g., detention ponds, riprap, or drop structures), as deemed necessary by a hydrologic or engineering consultant, will be used at storm drain outlets, drainage crossings, and/or downstream of all culverts, pipe outlets, and brow ditches to reduce velocity and prevent erosion.

- A maintenance plan for temporary erosion control facilities will be established. This typically involves inspection, cleaning, and repair operations being conducted after runoff-producing rainfall.

- Removal and disposal of ground water (if any) encountered during construction activities will be coordinated with the RWQCB to ensure proper disposal methods and locations under a General Dewatering Permit if required. This may involve specific measures such as removing excess sediment (through the use of desilting basins, etc.) and limiting discharge velocity.

- Specified fueling and maintenance procedures will be designated to preclude the discharge of hazardous materials used during construction (e.g., fuels, lubricants, and solvents). Such designations will include specific measures to preclude spill including proper handling and disposal techniques.

5.2.6 Roadkill

Roadkill impacts would be considered significant if they resulted in adverse effects to federally or state listed species. Roadkill could occur as vehicles travel on the internal roads associated with the project. Buena Vista Creek provides the primary local wildlife movement corridor through the project site, and a bridge is proposed across the creek that would allow for relatively unimpeded wildlife movement along the creek. The regional corridor in the southwest portion of the site is completely avoided. Therefore, on-site roadkill impacts are anticipated to be adverse but not significant.

5.2.7 Shading

The bridge crossing of Buena Vista Creek will not result in any direct impacts to riparian habitat, however, it will result in indirect impacts through shading. Impacts total 0.25 acre of riparian habitat. These impacts are considered significant.

5.2.8 Noise

Noise from grading, grubbing, and vehicular traffic would be a temporary impact to local wildlife. Noise impacts would be considered significant if sensitive species, such as the least Bell's vireo, coastal California gnatcatcher or raptor species were displaced and failed to breed. Breeding mammals and birds may temporarily leave the project vicinity during construction activities; however, they would be expected to return afterward once the noise impact has been eliminated because the habitat will remain in place and viable for reoccupation by the displaced species. Noise levels during grading at the grading/open space interface throughout the site would be in excess of 60 dBA L_{eq}. Such noise impacts to nesting least Bell's vireos or coastal California gnatcatchers would be considered significant.

5.2.9 Fugitive Dust

Dust released during grading activities could cover vegetation in adjacent habitat areas. The resulting dust-induced shading could reduce native plant productivity, in turn displacing native vegetation, reducing diversity, encouraging weed invasion, adversely affecting wildlife, and increasing fire susceptibility. One of the project design measures requires that the monitoring biologist periodically monitor adjacent habitats for excessive amounts of dust, and recommend remedial measures to address dust control if necessary. As a result, the effects of dust on surrounding vegetation are considered less than significant.

6.0 MITIGATION

The proposed project would significantly impact natural vegetation communities and species. Mitigation measures would be required to reduce these impacts to below a level of significance.

6.1 DIRECT IMPACTS

6.1.1 Vegetation Communities

The HMP stresses a no net loss policy with regard to wetland and riparian vegetation communities. Therefore, impacts to Group A habitats are generally mitigated through a combination of habitat creation at a 1:1 ratio, and restoration or enhancement at a 2:1 ratio for an overall mitigation ratio of 3:1. Impacts to upland vegetation communities in Groups B through E would be mitigated on site in accordance with Table 11 of the HMP. Impacts to Group F communities may be mitigated through on-site preservation of existing native habitats or subject to a Habitat Development Fee.

Based on the requirements under the Carlsbad HMP, impacts to riparian woodland, southern willow scrub, mule fat scrub, and native grassland would be mitigated at a 3:1 ratio, and impacts to non-wetland waters (unvegetated channel/streambed) would be mitigated at a 1:1 ratio. Impacts to coastal sage chaparral scrub and Diegan coastal sage scrub require mitigation at a 2:1 ratio because these habitats are considered to be occupied by the coastal California gnatcatcher, southern mixed chaparral, and baccharis scrub at a 1:1 ratio, and non-native grassland at a 0.5:1 ratio. Because eucalyptus woodland and disturbed habitat have potential to support a limited number of native plant and animal species, the Carlsbad HMP requires either payment of a Habitat and Development Fee on onsite preservation of higher quality habitats to mitigate for impacts to these vegetation communities. The mitigation ratio is 0.1:1 for onsite preservation. The project is proposing to offset impacts to these habitats through onsite preservation of southern mixed chaparral.

Furthermore, the Corps, CDFG, and Carlsbad HMP all require no net loss of wetlands, a policy under which mitigation occurs at a minimum ratio of 1:1 with a combination of creation and possibly restoration.

Based on the mitigation ratios presented above, the following mitigation measures would be required to offset impacts to vegetation communities (Figure 5; Table 8). Further detail on mitigation for impacts to wetlands is presented in Section 6.1.2, below.

- Impacts to southern riparian woodland, southern willow scrub and mule fat scrub shall be mitigated at a 3:1 ratio with a minimum 1:1 creation ratio. In total, impacts to riparian vegetation communities shall require 1.26 acres of mitigation. The proposed project shall include 0.42 acres of riparian creation, and the remaining 0.84 acre of mitigation would occur with enhancement of wetlands on-site or immediately off-site along Buena Vista Creek. Alternatively, the project may complete mitigation at an off-site location acceptable to the City and Resource Agencies. Refer to Figure 12 for the proposed location of riparian creation.

- Impacts to 0.2 acre of native grassland shall be mitigated at a 3:1 ratio (0.6 acre) through on-site preservation of 0.1 acre of native grassland and restoration of 0.5 acre of native grassland within on-site open space (Figure 12).

- Impacts to 13.1 acres of Diegan coastal sage scrub shall be mitigated at a 2:1 ratio (26.2 acres) through on site preservation of 25.2 acres of Diegan coastal sage scrub. The remaining 1.0 acres shall be mitigated through restoration of Diegan coastal sage scrub on site. An additional 3.5 acres will be revegetated with Diegan coastal sage scrub species for erosion control purposes, and will be required to meet cover criteria for erosion control, but will not be required to meet success criteria for Diegan coastal sage scrub being used for project mitigation. All revegetated slopes will be maintained by the project proponent until success criteria have been met before being added to the preserve to be managed by the preserve manager.

- Impacts to 0.2 acre of coastal sage chaparral scrub and 0.1 acre of southern mixed chaparral shall be mitigated at a 1:1 ratio (0.3 acre) through on-site preservation of 0.2 acre of coastal sage chaparral scrub and 0.1 acre of southern mixed chaparral.

- Impacts to 24.6 acres of non-native grassland shall be mitigated at a 0.5:1 ratio (12.3 acres). The proposed project shall include preservation of 10.0 acres of non-native grassland and either payment of the in lieu fee or restoration of 2.3 acres of grassland habitat on site.

- Impacts to 6.3 acres of disturbed habitat, 0.1 acre of eucalyptus woodland and 0.4 acre of non-native vegetation shall be mitigated at a 0.1:1 ratio with onsite preservation of 0.68 acre southern mixed chaparral (6.8 acres of impact times 0.1).

Restoration Plans

The preparation of a riparian and native grassland restoration plan will be required as a condition of the mitigation for impacts to riparian and native grassland vegetation communities. The plan will be require review and approval by the City and include the following.

Riparian Restoration Plan:

a. All final specifications and topographic-based grading, planting, and irrigation plans (0.5-foot contours and typical cross-sections) for the creation/restoration sites. All wetland mitigation areas shall be graded to the same elevation as adjacent existing jurisdictional wetlands areas, and/or to within 1 foot of the groundwater table, and shall be left in a rough grade state with micro topographic relief (including channels for wetlands) that mimics natural topography, as directed by the City and Resource Agencies. Topsoil and plant materials salvaged from the impacted areas (including live herbaceous shrub and tree species) shall be transplanted to, and/or used as a seed/cutting source for, the riparian/wetland creation and enhancement areas to the maximum extent practicable as directed by the City and Resource Agencies. Planting and irrigation shall not be installed

- Project Boundary
- Brush Managment
- Impacts
- Diegan Coastal Sage Scrub Revegetation Slopes
- Hp Palmer's Grapplinghook *(Harpagonella palmeri)*
- CAGN Coastal California Gnatcatcher *(Vireo bellii pusillus)*
- LBV Least Bell's Vireo *(Vireo bellii pusillus)*
- Freshwater Marsh
- Mule Fat Scrub
- Southern Willow Scrub
- Southern Riparian Woodland
- Southern Riparian Forest
- Riparian Creation/Restoration
- Baccharis Scrub
- Disturbed Wetland
- Streambed
- Native Grassland
- Diegan Coastal Sage Scrub
- Diegan Coastal Sage Scrub Creation/Restoration
- Coastal Sage Chaparral Scrub
- Southern Mixed Chaparral
- Non-native Grassland
- Eucalypyus Woodland
- Non-native Vegetation
- Open Water
- Disturbed Habitat
- Developed

Vista Way
78
Haymar Drive
Potential Wetland Mitigation Area
Buena Vista Creek
Potential Wetland Mitigation Area
LBV
CAGN
Hp 1000
Hp 200
Hp 200
Hp 100
Hp 50
Hp 30
Hp 100
Hp 20
Hp 1000
Potential Wetland Mitigation Areas
Potential Native Grassland Mitigation Area
Marron Road
Simsbury Court
Tamarack Avenue
Vancouver Street
Carlsbad Village Drive

N
W E
S
400 200 0 400
Feet
Job No: MMC-40 Date: 10/04/12

I:\ArcGIS\M\MMC-40 QuarryCreek\Map\BIO\MasterPlan\Fig12_MitigationAreas.mxd -EV

Potential Wetland, Native Grassland and Sage Scrub Mitigation/Restoration Areas

QUARRY CREEK MASTER PLAN

HELIX Environmental Planning

Figure 12

until the City and Resource Agencies have approved of the mitigation site grading. All plantings shall be installed in a way that mimics natural plant distribution, and not in rows;

b. Planting palettes (plant species, size, and number/acre) and seed mix (plant species and pounds/acre). The multitude of plant palettes proposed in the draft plans shall include native species specifically associated with the habitat type(s). Unless otherwise approved by the City and Resource Agencies, only locally native species (no cultivars) obtained from as close to the project area as possible shall be used. The source and proof of local nativeness of all plant material and seed shall be provided;

c. Container plant survival shall be 80 percent of the initial plantings for the first 5 years. At the first and second anniversary of plant installation, all dead plants shall be replaced unless their function has been replaced by natural recruitment;

d. A final implementation schedule that indicates when all riparian/wetland impacts, as well as riparian/wetland creation/restoration grading, planting, and irrigation, will begin and end. Necessary site preparation and planting shall be completed during the concurrent or next planting season (i.e., late fall to early spring) after the City' and Resource Agencies' approval of grading. Any temporal loss of habitat caused by delays in riparian/wetland habitat creation/restoration shall be offset through like habitat creation/restoration at a 0.5:1 ratio for every 6 months of delay (i.e., 1:1 for 12 months delay, 1.5:1 for 18 months delay, etc.). In the event that the project applicant is wholly or partly prevented from performing obligations under the final plans (causing temporal losses due to delays) because of unforeseeable circumstances or causes beyond the reasonable control, and without the fault of negligence of the project applicant, including but not limited to natural disasters (e.g., earthquakes, etc.), labor disputes, sudden actions of the elements (e.g., further landslide activity), or actions or inaction by federal or state agencies, or other governments, the project applicant will be excused by such unforeseeable cause(s);

e. Five years of success criteria for wetland/riparian creation/restoration areas, including: separate percent cover criteria for herbaceous understory, shrub midstory, and tree overstory, and a total percent absolute cover for all 3 layers at the end of 5 years; evidence of natural recruitment of multiple species for all habitat types; 0 percent coverage for Cal-IPC's "Invasive Plant Inventory" species, and no more than 10 percent coverage for other exotic/weed species;

f. A minimum of 5 years of maintenance and monitoring of riparian/wetland creation/restoration areas, unless success criteria are met earlier and all artificial water supply has been off for at least 2 years.

g. A qualitative and quantitative vegetation monitoring plan with a map of proposed sampling locations. Photo points shall be used for qualitative monitoring and stratified-random sampling shall be used for all quantitative monitoring;

h. Contingency measures in the event of creation/restoration failure;

i. Annual mitigation maintenance and monitoring reports shall be submitted to the City and Resource Agencies no later than December 1 of each year;

j. A wetland delineation shall be done to confirm that Corps and CDFG jurisdictional wetlands have been successfully created/restored prior to final approval of creation/restoration sites.

Native Grassland and Diegan Coastal Sage Scrub Habitat Restoration Plan:

a. All final specifications and topographic-based grading (with 10-foot contours), planting, and irrigation plans (if irrigation is used). All upland habitat creation/restoration sites shall be prepared for planting by decompacting the top soil in a way that mimics natural upland habitat top soil to the maximum extent practicable while maintaining slope stability. Topsoil and plant materials salvaged from the upland habitat areas to be impacted shall be transplanted to, and/or used as a seed/cutting source for, the upland habitat restoration/creation areas to the maximum extent practicable as approved by Carlsbad and the Wildlife Agencies. Planting and irrigation shall not be installed until the City and Wildlife Agencies have approved of upland habitat restoration/creation site grading. All plantings shall be installed in a way that mimics natural plant distribution, and not in rows;

b. Planting palettes (plant species, size, and number/acre) and seed mix (plant species and pounds/acre). The upland plant palette proposed in the draft plans shall include native species specifically associated with the habitat type(s). Unless otherwise approved by the City and Wildlife Agencies, only locally native species (no cultivars) obtained from as close to the project area as possible shall be used. The source and proof of local nativeness of all plant material and seed shall be provided;

c. Container plant survival shall be 80 percent of the initial plantings for the first 5 years. At the first and second anniversary of plant installation, all dead plants shall be replaced unless their function has been replaced by natural recruitment;

d. A final implementation schedule that indicates when all native grassland and Diegan coastal sage scrub impacts, as well as native grassland and Diegan coastal sage scrub creation/restoration grading, planting, and irrigation, will begin and end. Necessary site preparation and planting shall be completed during the concurrent or next planting season (i.e., late fall to early spring) after the City and Wildlife Agencies' approval of grading. Any temporal loss of habitat caused by

delays in native grassland and Diegan coastal sage scrub habitat creation/restoration shall be offset through like habitat creation/restoration at a 0.5:1 ratio for every 6 months of delay (i.e., 1:1 for 12 months delay, 1.5:1 for 18 months delay, etc.). In the event that the project applicant is wholly or partly prevented from performing obligations under the final plans (causing temporal losses due to delays) because of unforeseeable circumstances or causes beyond the reasonable control, and without the fault of negligence of the project applicant, including but not limited to natural disasters (e.g., earthquakes, etc.), labor disputes, sudden actions of the elements (e.g., further landslide activity), or actions or inaction by federal or state agencies, or other governments, the project applicant will be excused by such unforeseeable cause(s);

e. Five years of success criteria for native grassland creation/restoration areas, including: a total of 40-65 percent absolute cover; evidence of natural recruitment of multiple species; 0 percent coverage for Cal-IPC List A and B species, and no more than 10 percent coverage for other exotic/weed species;

f. A qualitative and quantitative vegetation monitoring plan with a map of proposed sampling locations. Photo points shall be used for qualitative monitoring and stratified, random sampling shall be used for all quantitative;

g. Contingency measures in the event of creation/restoration failure;

h. Annual mitigation maintenance and monitoring reports shall be submitted to Carlsbad and the Wildlife Agencies after the maintenance and monitoring period and no later than December 1 of each year.

Table 11
MITIGATION FOR IMPACTS TO VEGETATION COMMUNITIES – PROPOSED PROJECT

VEGETATION COMMUNITY	HABITAT GROUP	EXISTING	IMPACTS	REQUIRED MITIGATION		PROPOSED PRESERVATION		
				Ratio†	Area	Preservation	Creation/ Enhancement[7]	Total[t]
Riparian forest (61330)	A	9.39	0	3:1	0	9.39	1.26	17.04
Southern riparian woodland (62000)	A	1.34	0.34	3:1	1.02	1.00		
Riparian habitat**	A	1.94	0	3:1	0	1.94		
Southern willow scrub (63320)	A	1.34	0.06	3:1	0.18	1.28		
Freshwater marsh (52400)	A	0.46	0	3:1	0	0.46		
Mule fat scrub (63310)	A	0.43	0.02	3:1	0.06	0.41		
Non vegetated channel/streambed	A	1.29	0	1:1	0	1.29		
Disturbed wetland	A	0.01	0	1:1	0	0.01		
Open water	B	0.38	0	3:1	0	0.38		0.38
Native grassland (42100)	B	0.3	0.2	3:1	0.6	0.1	0.5	0.6
Diegan coastal sage scrub (32500)	C	42.9	13.1	2:1	26.2	25.2 5.1[3]	4.5[4]	34.8[3]
Baccharis scrub (32530)	D	6.2	1.1	1:1	1.1	5.1[2]	NA	5.1
Coastal sage chaparral scrub (37GOO)	D	0.4	0.2	1:1	0.2	0.2	NA	0.2
Southern mixed chaparral (37120)	D	5.1	0.1	1:1	0.1	5.0[5]	NA	5.0

Table 11 (cont.)
MITIGATION FOR IMPACTS TO VEGETATION COMMUNITIES – PROPOSED PROJECT

VEGETATION COMMUNITY	HABITAT GROUP	EXISTING	IMPACTS	REQUIRED MITIGATION		PROPOSED PRESERVATION		
				Ratio†	Area	Preservation	Creation/ Enhancement	Total[t]
Non-native grassland (42200)	E	34.6	24.6	0.5:1	12.3	10.0	2.3[6]	12.3
Eucalyptus woodland (79000)	F	0.1	0.1	0.1:1	0.01+	0	NA	0
Non-native vegetation (11000)	F	0.4	0.4	0.1:1	0.04[+]	0	NA	0
Disturbed habitat (11300)	F	16.5	6.3	0.1:1	0.63[+]	10.2	NA	6.01
Developed (12000)		35.12	33.8		0	0	NA	1.32
TOTAL		**158.2**	**80.32**	**--**	**42.44**	**77.88**	**0[8]**	**82.75[t7]**

*All areas are presented in acre(s) rounded to the nearest 0.01
[**]Riparian habitat creation will be comprised of one or more of the other riparian vegetation communities present on site
[+]Mitigation for impacts to disturbed habitat would occur through payment of HMP in-lieu fees
[1] Includes 5.1 acres restored as part of reclamation plan but not counted as mitigation
[2]Includes excess of 4.0 acres not needed for mitigation
[3]Includes 5.1 acres restored as part of reclamation plan but not counted as mitigation.
[4]Includes 4.5 acres of slope restoration for the proposed project
[5]Includes excess of 4.9 acres not needed for mitigation
[6]Shortfall of 2.3 acres will be met by on-site restoration of 2.3 acres of grassland habitat or payment of HMP in-lieu fees
[76]Preservation and creation do not match total because preservation only represents areas required for mitigation while total includes excess areas conserved but not required for mitigation
[8]Creation and enhancement totals included in preservation total
[t]Represents acres of habitat actually conserved for each habitat type. May not match "preservation" column

6.1.2 Jurisdictional Areas

The Corps and CDFG as well as the Carlsbad HMP have a no net loss goal for wetlands, whereby mitigation would occur on site at a 3:1 mitigation to impact ratio through a combination of habitat creation at a 1:1 ratio and restoration/enhancement at a 2:1 ratio. Non-wetland WUS/streambeds are generally mitigated through creation at a 1:1 ratio.

The proposed project would cause impacts to 0.21 acre of Corps jurisdictional areas and 0.47 acre of CDFG jurisdictional areas. Impacts to Corps jurisdictional areas shall require 0.63 acre of mitigation, including at least 0.21 acre of creation; impacts to CDFG jurisdictional areas shall require 1.41 acres of mitigation, including at least 0.47 acres of creation. The riparian creation will occur on site, and the remaining 0.94 acre of mitigation would occur with enhancement of wetlands on site or immediately off-site along Buena Vista Creek. Alternatively, the project may complete mitigation at an off-site location acceptable to the City and Resource Agencies Refer to Figure 12 for the proposed location of riparian creation on site.

6.1.3 Sensitive Species Consistent with the HMP, impacts to sensitive animal species will be met through on-site preservation of habitats capable of supporting these species. Impacts to coastal California gnatcatchers and orange-throated whiptails shall be mitigated by the on-site preservation of 24.7 acres of Diegan coastal sage scrub (does not include an additional 5.1 acres previously created for mitigation of the Reclamation Plan (HELIX 2010), restoration of 1.0 acres of Diegan coastal sage scrub and 1.1 acre of baccharis scrub. Impacts to occupied coastal sage scrub require the issuance of an Incidental Take Permit from the City Planner.

Impacts to the yellow warbler shall be mitigated by creation of 0.40 acres and preservation 17.01 acres of riparian habitat on-site and restored riparian habitat on and/or off-site.

Any impacts to white-tailed kites shall be mitigated through by the creation and preservation of riparian habitat, Diegan coastal sage scrub, and non-native grassland on site.

6.1.4 Migratory Bird Treaty Act

Potential direct impacts to bird species covered under the MBTA will be mitigated by restricting brushing and grading to outside of the breeding season of most bird species (general breeding season is February 15 to August 15). Grubbing, grading, or clearing during the breeding season of MBTA covered species could occur if it is determined via a pre-construction survey that no nesting birds (or birds displaying breeding or nesting behavior) are present immediately prior to grubbing, grading, or clearing and will require approval of the City that no breeding or nesting avian species are present in the vicinity of the grubbing, grading, or clearing. The City shall be notified of any sensitive bird species identified during the pre-construction surveys.

6.2 INDIRECT IMPACTS

6.2.1 Noise

If project grading (other than clearing and grubbing of sensitive habitats) is necessary and adjacent to preserved on-site habitat during the bird breeding season (February 15-September 15), a qualified biologist shall conduct pre-construction surveys in the adjacent habitat for the coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, and nesting raptors. The survey shall begin not more than 3 days prior to the beginning of grading activities. The Wildlife Agencies shall be notified if any of these species are observed nesting within 500 feet of proposed grading activities. No activities which would result in noise levels exceeding 60 dBA hourly L_{eq} within this 500-foot buffer shall be allowed. Background noise (e.g., SR 78) shall be excluded from the 60 dBA calculation. If grading activities are not completed prior to the breeding season, and any of these species are present, and noise levels exceed this threshold, noise barriers shall be erected to reduce noise impacts to occupied habitat to below 60 dBA hourly L_{eq} and/or the activities shall be suspended. Impacts resulting from noise for non-listed species other than raptors are not considered significant, and mitigation is not warranted.

6.2.2 Human Activity

The proposed project would have some significant edge effects (including from human activity) along the western boundary as well as along the development/open space boundaries. To reduce edge effects, on-site human activity, and potential impacts related to the introduction of exotic and domestic animals, the biological open space lots shall be actively managed and monitored. The required PMP (discussed above in project design features) shall ensure that access be restricted to developed areas. Permanent fencing shall be provided for all backyards abutting proposed project open space. In addition, preserved habitat shall be posted with signs precluding access due to habitat sensitivity and prohibiting dumping. Residents shall be educated in access restrictions, control of domestic animals, prevention of irrigation runoff, and sensitivity of habitats on site.

6.2.3 Shading

Impacts to 0.20 acre of riparian habitats as a result of shading shall be mitigated at a 1:1 ratio through on-site or off-site enhancement of existing disturbed riparian habitat. Potential on-site enhancement locations are shown on Figure 12.

7.0 HMP COMPLIANCE

The project proposes to change the preserve boundary and, therefore, is not consistent with the HMP. Changes to the boundary of Proposed Hardline Preserves require the processing and approval of an Equivalency Finding. This section summarizes HMP requirements and compares the existing HMP Hardline Preserve boundary with the proposed Hardline Boundary.

7.1 CONSISTENCY WITH HMP PRESERVE

The project lies within Core 2 of the HMP, which comprises approximately 352 acres of the north-central portion of Carlsbad. The parcel also lies within Local Facilities Management Zone (LFMZ) 25, which shows a Hardline Preserve boundary on site. Some other off-site areas in LFMZ 25 are considered a "standards" area under the HMP, in which specific conservation goals and planning standards are applied to those portions of a given LFMZ that are not already hardlined. Because the boundaries of the project are hardlined, these LFMZ 25 conservation goals and planning standards, therefore, do not apply to the property. Note that subsequent to the adoption of the HMP, the properties in the "standards" area of LFMZ 25 are now a part of the Buena Vista Creek Ecological Reserve.

As noted previously, the Carlsbad HMP shows the Hardline Preserve to the north of the existing alignment of Buena Vista Creek. This Hardline Preserve was based on a reclamation plan for the previous quarry operation that was approved prior to adoption of the HMP, and which showed the realignment of the creek to the north. Based on input from the USFWS, Corps, and CDFG, the existing alignment of Buena Vista Creek was retained as part of the Reclamation Plan approved in 2010 (City of Carlsbad 2010). The objective of the new Hardline Preserve configuration is to provide for the restoration of Buena Vista Creek and adjacent upland buffers, providing habitat values for riparian-dependant wildlife species. The proposed project still meets the objectives of the Hardline Preserve in this area by maintaining the restored Buena Vista Creek and adjacent upland buffers within the existing creek channel location.

The panhandle portion of the project has also been designed to be in compliance with the HMP, and in fact has pulled back the overall development footprint from the currently approved Hardline by 9.50 acres, resulting in a net increase in the HMP preserve of 9.50 acres for the proposed project. Figure 11 shows the existing Hardline and the proposed revised HMP Hardline Boundary overlain to highlight the proposed changes. These changes increase overall functioning of the primary regional corridor by increasing the overall size of the corridor, by removing impacts to riparian habitats in the corridor, and minimizing edge effects.

Table 12 provides a summary of the acres of habitat that would have been conserved by a project consistent with the HMP Hardline, compared to conserved habitat proposed based on the proposed project. The HMP Hardline would conserve a total of 73.25 acres on site. The proposed project would conserve 82.75 acres, including individual sensitive habitat categories, in excess of the 73.25 acres under the current HMP Hardline.

Thus, while the project does not exactly match the boundaries of the revised Hardline Preserve Areas under the Carlsbad HMP, the proposed project is considered consistent with the Carlsbad

HMP because it meets the goals and objectives of the HMP for this portion of the plan, providing equivalent type and quantity of habitat areas within the study area, as shown below.

Table 12
HMP CONSERVATION COMPARISON

HABITAT GROUP CATEGORY	ADOPTED HMP WITH RECLAMATION PLAN RESTORATION	PROPOSED HMP WITH PROPOSED PROJECT	COMPARISON Difference Proposed – Adopted
Coastal Sage Scrub	32.47	40.23	7.76
Chaparral	4.94	4.94	0.00
Riparian	14.07	15.73	1.66
Marsh	0.85	0.46	-0.39
Grassland	10.32	10.14	-0.18
Eucalyptus	0.06	0.04	-0.02
Disturbed	9.83	10.37[5]	0.54
Developed	0.71	0.84	0.13
TOTAL ACRES	**73.25**	**82.75**	**9.5**

[1]1995 Vegetation categories used in Carlsbad HMP
[2]Vegetation based on HELIX Environmental Planning, Inc. mapping
[3]Restoration within the realigned creek channel
[4]Restoration within Refined Alternative 3 channel
[5]Portions of these disturbed areas may be used for grassland and riparian restoration

7.2 CONSISTENCY WITH HMP HABITAT REQUIREMENTS

7.2.1 Wetlands

All projects that impact wetlands must demonstrate that:

- Impacts cannot be avoided by a feasible alternative.
- Impacts have been avoided to the maximum extent practicable.
- Impacts will be mitigated to assure no net loss of habitat value or function.

The approved Hardline would have resulted in greater impacts to wetland habitats because of greater impacts in the western portion of the panhandle and along the south-central portion of the site. The proposed project significantly reduces impacts to existing riparian habitat over the HMP by 1.27 acres. Avoidance of the remaining 0.40 acre of wetland habitat has been determined to not be feasible because it would eliminate the crossing of Buena Vista Creek and would significantly impact the development through the south-central portion of the site. As a result, impacts have been avoided to the maximum extent feasible. Impacts to wetlands are being mitigated to ensure that no reduction in wetland functions and services occurs, and the resulting creation of high quality habitat and enhancement of existing degraded habitat would

result in no net loss of functions or services. The proposed project results in 1.27 acres of riparian habitat avoidance not provided for by the existing HMP Hardline Boundary. The project is therefore consistent with the HMP for wetland mitigation requirements.

7.2.2 Uplands

Impacts to upland habitats must be mitigated consistent with Table 11 of the HMP. The mitigation ratios proposed for the project are consistent with the ratios in Table 11. Additionally, the revised Hardline Boundary results in a net decrease in impacts to upland habitats. The proposed project is therefore consistent with the HMP for upland mitigation requirements.

7.3 CONSISTENCY WITH HMP SPECIES REQUIREMENTS

The HMP states that "the primary mitigation for impacts to HMP Species under the Plan is the conservation and management of habitat for species in the preserve system" (City of Carlsbad 2004). It also states that incidental take must be minimized and mitigated to the maximum extent practicable. Table 9 of the HMP provides specific minimization and mitigation measures for covered species. Four of these species addressed in Table 9, the least Bell's vireo, coastal California gnatcatcher, yellow-breasted chat, and orange-throated whiptail, occur on site. Conservation goals for the least Bell's vireo include:

- Conserve approximately 495 acres (86 percent) of riparian habitats.
- Assure no net loss of riparian scrub within the City.
- Conserve 95 percent of known point locations for least Bell's vireos within preserve areas.

Impact avoidance/minimization measures for the least Bell's vireo include:

- Manage preserve areas to minimize activities that would degrade riparian habitat.
- Restrict activities in vireo-occupied habitat during the breeding season.
- Where appropriate, restore or enhance riparian habitat suitable for vireos.

In addition, there are several species-specific measures identified for the vireo, including:

- Conduct surveys by a qualified biologist.
- For areas adjacent to occupied vireo habitat, construction noise levels at the riparian canopy edge shall be kept below 60 dBA Leq (measured as Equivalent Sound Level) from 5 a.m. to 11 a.m. between March 15 and July 15. For the remainder of the season, the noise levels shall not exceed 60 decibels, averaged over a one-hour period on an A-weighted decibel (dBA; i.e., 1 hour Leq/dBA).
- If new projects adjacent to the preserve create conditions conducive to cowbirds, jurisdictions shall require monitoring and control of cowbirds.
- Biological buffers of 100 feet shall be maintained for occupied vireo habitat.

The proposed project is consistent with these goals and measures by having completed focused surveys for the vireo, mitigating with at least a 1:1 creation component to ensure no net loss of

riparian habitats, enhancing additional riparian habitat at a 2:1 ratio, avoiding all of the known vireo locations on site, providing long-term management of project open space, and ensuring that clearing of riparian habitat occurs outside of the breeding season. The project would not create conditions conducive to cowbirds, and biological buffers would meet or exceed 100 feet from existing occupied vireo habitat. The mitigation measure in Section 6.2.1 addresses potential noise impacts and would ensure compliance with noise requirements.

Conservation goals for the coastal California gnatcatcher include:

- Conserve approximately 2,000 acres of coastal sage scrub.
- Conserve mapped gnatcatcher locations within conserved habitat.
- Maintain regional linkages.

Impact avoidance/minimization measures for the coastal California gnatcatcher include:

- Manage preserve areas to minimize edge effects.
- Prepare and implement a fire management program for preserve areas.
- Where possible, enhance and restore sage scrub habitat within preserve areas.

The proposed project would conserve 40.23 acres of sage scrub habitat compared with 32.47 acres under the current HMP Hardline. The proposed project would also provide long-term management of project open space. Furthermore, the additional conserved habitat in the panhandle portion of the project (Figure 11) would minimize impacts to one of the pairs otherwise impacted by the current HMP Hardline. For these reasons, the project is consistent with the goals and measures for the gnatcatcher.

One conservation goal is identified for the yellow-breasted chat:

- Conserve riparian habitat within preserve areas, and assure no net loss of riparian habitats within the City.

Impact avoidance/minimization measures for the yellow-breasted chat include:

- Manage preserve areas to minimize activities that would degrade riparian habitat.
- Restrict activities in chat-occupied habitat during the breeding season.
- Where appropriate, restore or enhance riparian habitat suitable for the chat.

The proposed project is consistent with these goals and measures by mitigating with at least a 1:1 creation component to ensure no net loss of riparian habitats, enhancing additional riparian habitat at a 2:1 ratio, providing long-term management of project open space, and ensuring that clearing of riparian habitat occurs outside of the breeding season.

Conservation goals for the orange-throated whiptail include:

- Conserve approximately 2,000 acres of coastal sage scrub, 700 acres of chaparral, and 350 acres of southern maritime chaparral where the species may occur.
- Maintain linkages between populations in Core Area 7 and areas to the southeast.

Impact avoidance/minimization measures for the coastal California gnatcatcher include:

- Manage preserve areas to restrict activities that would degrade habitat; control predators.
- If opportunities arise, consider establishing a relocation program (possibly in Core Area 3 or 7) to initiate new populations or enhance and maintain existing populations.
- Provide management measures which facilitate movement between populations within the City as well as to regional linkages.

The proposed project would conserve 40.23 acres of sage scrub and chaparral habitat compared with 32.47 acres under the current HMP Hardline. The proposed project would also provide long-term management of project open space. The project lies outside of Core Area 3 and 7, and these measures do not apply. For these reasons, the project is consistent with the goals and measures for the orange-throated whiptail.

7.4 CONSISTENCY WITH HMP ADJACENCY STANDARDS

7.4.1 Fire Management

Fire management includes both the recognition that fire is an important component of natural ecosystems in Southern California while insuring public safety for areas adjacent to the HMP preserve. The project has been designed to exclude all brush management from the HMP preserve, and access points will be provided to allow for fire equipment to access the preserve. The HMP requires the preparation of a Fire Management Plan by the City.

7.4.2 Erosion Control

Erosion can become an issue within and adjacent to the preserve where steep, erodible slopes occur, or where areas lack vegetation. All slopes adjacent to the preserve will be fully vegetated and maintained to avoid significant erosion onto the preserve, and the project will be required to implement the SWPPP during construction. The PMP for the open space will include measures to address erosion within the preserve.

7.4.3 Fencing, Signs, and Lighting

Fencing and signage provide access control to the preserve. Permanent fencing shall be provided for all backyards abutting proposed project open space. In addition, preserved habitat shall be posted with signs precluding access due to habitat sensitivity and prohibiting dumping. Residents shall be educated in access restrictions, control of domestic animals, prevention of irrigation runoff, and sensitivity of habitats on site.

Excessive lighting can adversely affect animal species within the preserve. All exterior lighting adjacent to preserved habitat including street lighting for Street A shall be limited to low pressure sodium sources of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat to the maximum extent practicable.

7.4.4 Predator and Exotic Species Control

Domesticated animals, particularly cats, are known to impact native wildlife in the habitat areas immediately adjacent to development. Project fencing and the maintenance of healthy predator populations (coyote and bobcat) will minimize introduction of domestic animals. The PMP will also include an education program for homeowners to alert them to the need to keep pets outside of the preserve.

Brown-headed cowbirds have been reported on site and on the adjacent property to the west in low numbers (HELIX 2008b and 2008c; absent in 2011 [HELIX 2011b]), and the proposed project is not expected to significantly increase the number of brown-headed cowbirds in the surrounding habitat. The PMP will include requirements for monitoring of cowbird populations and coordinating cowbird control with the adjacent Buena Vista Creek Ecological Preserve.

Exotic plant control will be a requirement of the PMP.

8.0 CERTIFICATION/QUALIFICATION

The following individuals contributed to the fieldwork and/or preparation of this report.

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Appendix A

PLANT SPECIES OBSERVED

Appendix A
PLANT SPECIES OBSERVED – QUARRY CREEK

FAMILY	SCIENTIFIC NAME	COMMON NAME
ANGIOSPERMS - DICOTS		
Aizoaceae	*Carpobrotus edulis*	Hottentot-fig
Amaranthaceae	*Salsola tragus*	Russian thistle
Anacardiaceae	*Malosma laurina*	laurel sumac
	Rhus integrifolia	lemonadeberry
	Schinus molle	Peruvian pepper tree
Apiaceae	*Conium maculatum*	poison hemlock
	Daucus pusillus	rattlesnake weed
	Foeniculum vulgare	fennel
Asclepiadaceae	*Asclepias* sp.	milkweed
Asteraceae	*Ambrosia psilostachya*	western ragweed
	Artemisia californica	California sagebrush
	Baccharis pilularis	coyote bush
	Baccharis salicifolia	mule fat
	Centaurea melitensis	star thistle
	Chrysanthemum coronatum	garland daisy
	Cirsium vulgare	bull thistle
	Conyza Canadensis	horseweed
	Conyza bonariensis	flax-leaved fleabane
	Corethrogyne filaginifolia	California-aster
	Deinandra fasciculata	fascicled tarplant
	Encelia californica	California encelia
	Eriophyllum confertiflorum	golden yarrow
	Filago gallica	narrow-leaf filago
	Gnaphalium californicum	California everlasting
	Gnaphalium sp.	everlasting
	Hazardia squarrosa var. *grindelioides*	saw-toothed goldenbush
	Hedypnois cretica	Crete hedypnois
	Heterotheca grandiflora	telegraph weed
	Hypochaeris glabra	smooth cat's ear
	Isocoma menziesii	goldenbush
	Lactuca serriola	wild lettuce
	Matricaria discoidea	pineapple weed
	Osmadenia tenella	osmadenia
	Picris echioides	bristly ox-tongue
	Sonchus oleraceus	common sow thistle
	Stylocline gnaphaloides	everlasting nest straw
	Uropappus lindleyi	silver puffs

Appendix A (cont.)
PLANT SPECIES OBSERVED – QUARRY CREEK

FAMILY	SCIENTIFIC NAME	COMMON NAME
ANGIOSPERMS – DICOTS (cont.)		
Boraginaceae	*Amsinckia menziesii* var. *intermedia*	rancher's fiddleneck
	Harpagonella palmeri	Palmer's grapplinghook
Brassicaceae	*Brassica nigra*	black mustard
	Lobularia maritime	sweet alyssum
	Raphanus sativus	wild radish
Cactaceae	*Opuntia littoralis*	coastal prickly pear
	Opuntia sp.	prickly pear
Capparaceae	*Isomeris arborea*	bladderpod
Caryophyllaceae	*Cardionema ramosissima*	tread-lightly
	Silene gallica	common catchfly
	Spergularia villosa	villous sand-spurrey
	Stellaria sp.	starwort
Convulvulaceae	*Calystegia macrostegia*	morning glory
Crassulaceae	*Dudleya lanceolata*	coastal dudleya
Cucurbitaceae	*Marah macrocarpus*	wild cucumber
Euphorbiaceae	*Ricinus communis*	castor-bean
Fabaceae	*Acacia* sp.	acacia
	Astragalus trichopodus var. *lonchus*	ocean locoweed
	Lotus hamatus	grab lotus
	Lotus pershianus	Spanish-clover
	Lotus scoparius	deerweed
	Lotus scoparius var. glaber	deerweed
	Lotus sp.	lotus
	Lupinus succulentus	arroyo lupine
	Medicago polymorpha	bur-clover
	Melilotus indica	Indian sweet clover
Gentianaceae	*Centaurium venustum*	canchalagua
Geraniaceae	*Erodium botrys*	long-beak filaree
	Erodium cicutarium	red-stem filaree
Lamiaceae	*Salvia apiana*	white sage
	Salvia mellifera	black sage
Myrtaceae	*Eucalyptus* sp.	eucalyptus
Onagraceae	*Camissonia* sp.	sun-cup
Orobanchaceae	*Castilleja exserta*	purple owl's clover
Oxalidaceae	*Oxalis pes-carpae*	Bermuda buttercup
Phrymaceae	*Mimulus aurantiaca*	monkey-flower
Plantaginaceae	*Plantago erecta*	dwarf plantain
	Plantago lanceolata	English plantain

Appendix A (cont.)
PLANT SPECIES OBSERVED – QUARRY CREEK

FAMILY	SCIENTIFIC NAME	COMMON NAME
ANGIOSPERMS – DICOTS (cont.)		
Plumbaginaceae	*Limonium perezii*	statice
Polemoniaceae	*Navarretia hamata*	skunkweed
Polygonaceae	*Chorizanthe procumbens*	prostrate spineflower
	Eriogonum fasciculatum	buckwheat
	Eriogonum sp.	eriogonum
	Rumex crispus	curly dock
Primulaceae	*Anagallis arvensis*	scarlet pimpernel
Rosaceae	*Heteromeles arbutifolia*	toyon
Rubiaceae	*Galium aparine*	goosegrass
Salicaceae	*Salix lasiolepis*	arroyo willow
Simaroubaceae	*Ailanthus altissima*	tree of heaven
Solanaceae	*Datura wrightii*	jimson weed
	Nicotiana glauca	tree tobacco
Urticaceae	*Urtica dioica* var. *holoserica*	stinging nettle
Verbenaceae	*Verbena lasiostachys*	verbena
ANGIOSPERMS - MONOCOTS		
Agavaceae	*Yucca* sp.	yucca
Cyperaceae	*Cyperus* sp.	sedge
Hyacinthaceae	*Chlorogalum parviflorum*	small-flowered soap plant
Iridaceae	*Sisyrinchium bellum*	blue-eyed grass
Juncaceae	*Juncus bufonius*	toad rush
	Juncus dubius	mariposa rush
Poaceae	*Avena barbata*	slender wild oat
	Avena fatua	wild oat
	Bromus diandrus	common ripgut grass
	Bromus hordeaceus	soft chess
	Bromus madritensis	compact brome
	Cortaderia sp.	pampas grass
	Distichlis spicata	saltgrass
	Lolium multiflorum	Italian ryegrass
	Nassella pulchra	purple needlegrass
	Pennisetum setaceum	fountain grass
	Schismus barbatus	Mediterranean grass
	Vulpia myuros	fescue
Xanthorrhoeaceae	*Asphodelus fistulosus*	hollow-stem asphodel

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Appendix B

ANIMAL SPECIES OBSERVED OR DETECTED

Appendix B
ANIMAL SPECIES OBSERVED OR DETECTED
ON THE QUARRY CREEK PROJECT SITE

FAMILY	SCIENTIFIC NAME	COMMON NAME
INVERTEBRATES		
Apiidae	*Apis mellifera mellifera*	honey bee
Apiidae	*Bombus* sp.	bumble bee
Cambaridae	*Procambarus* sp.	crayfish
Hesperiidae	*Hylephila phyleus*	fiery skipper
Isopoda	*Armadillidium vulgare*	pillbug
Lycaenidae subfamily Theclinae	*Callophrys augustinus*	brown elfin butterfly
Nymphalidae	*Danaus gilippus*	Queen butterfly
Nymphalidae	*Nymphalis antiopa*	mourning cloak
Nymphalidae	*Precis coenia*	buckeye butterfly
Nymphalidae	*Vanessa cardui*	painted lady butterfly
Order Orthoptera	*Trimeroptropis pallidipennis*	pallid-winged grasshopper
Papilioninae	*Papilio rutulus*	western tiger swallowtail
Papilioninae	*Papilio zelicaon*	anise swallowtail butterfly
Pieridae	*Colias* sp.	sulfur butterfly
Pieridae	*Pieris protodice*	common white butterfly
Pieridae	*Pieris rapae*	cabbage white butterfly
Polyommatinae	*Icaricia acmon*	Acmon blue butterfly
Riodinidae	*Apodemia mormo virgulti*	Behr's metalmark butterfly
Tenebrionidae	*Eleodes* spp.	darkling beetle
Theraphosidae	*Aphonopelma sp.*	tarantula
VERTEBRATES		
Reptiles and Amphibians		
Hylidae	*Pseudacris regilla*	Pacific tree frog
Phrynosomatidae	*Uta stansburiana*	side blotched lizard
Birds		
Accipitridae	*Buteo jamaicensis*	red-tailed hawk
Accipitridae	*Buteo lineatus*	red-shouldered hawk
Accipitridae	*Circus cyaneus*	northern harrier
Aegithalidae	*Psaltriparus minimus*	bushtit
Anatidae	*Anas platyrhyncos*	mallard duck

Appendix B (cont.)
ANIMAL SPECIES OBSERVED OR DETECTED
ON THE QUARRY CREEK PROJECT SITE

FAMILY	SCIENTIFIC NAME	COMMON NAME
VERTEBRATES		
Birds		
Ardeidae	*Ardea herodias*	great blue heron
Ardeidae	*Butorides virescens*	green heron
Ardeidae	*Nycticorax nycticorax*	black-crowned night heron
Cardinalidae	*Guiraca caerulea*	blue grosbeak
Cardinalidae	*Pheucticus melanocephalus*	black-headed grosbeak
Charadriidae	*Charadrius vociferus*	killdeer
Columbidae	*Zenaida macroura*	mourning dove
Corvidae	*Aphelocoma californica*	western scrub jay
Corvidae	*Corvus brachyrhynchos*	American crow
Corvidae	*Corvus corax*	common raven
Cuculidae	*Geococcyx californianus*	greater road runner
Emberizidae	*Melospiza melodia*	song sparrow
Emberizidae	*Pipilo crissalis*	California towhee
Emberizidae	*Pipilo maculatus*	spotted towhee
Fringillidae	*Carduelis psaltria*	lesser goldfinch
Fringillidae	*Carpodacus mexicanus*	house finch
Hirundinidae	*Petrochelidon pyrrhonota*	cliff swallow
Hirundinidae	*Stelgidopteryx serripennis*	northern rough-winged swallow
Icteridae	*Icterus cucullatus*	hooded oriole
Icteridae	*Molothrus ater*	brown-headed cowbird
Mimidae	*Mimus polyglottos*	northern mockingbird
Mimidae	*Toxostoma redivivum*	California thrasher
Odontophoridae	*Callipepla californica*	California quail
Parulidae	*Dendroica petechia*	yellow warbler
Parulidae	*Geothlypis trichas*	common yellowthroat
Parulidae	*Icteria virens*	yellow-breasted chat
Parulidae	*Vermivora celata*	orange-crowned warbler
Picidae	*Picoides nuttallii*	Nuttall's woodpecker
Sylviidae	*Polioptila caerulea*	blue-gray gnatcatcher
Sylviidae	*Polioptila californica californica*†	coastal California gnatcatcher
Timaliidae	*Chamaea fasciata*	wrentit
Trochilidae	*Calypte anna*	Anna's hummingbird

Appendix B (cont.)
ANIMAL SPECIES OBSERVED OR DETECTED
ON THE QUARRY CREEK PROJECT SITE

FAMILY	SCIENTIFIC NAME	COMMON NAME
VERTEBRATES		
Birds		
Trochilidae	*Calypte costae*†	Costa's hummingbird
Troglodytidae	*Thryomanes bewickii*	Bewick's wren
Troglodytidae	*Troglodytes aedon*	house wren
Tyrannidae	*Empidonax difficilis*	pacific slope flycatcher
Tyrannidae	*Myiarchus cinerascens*	ash-throated flycatcher
Tyrannidae	*Sayornis nigricans*	black phoebe
Tyrannidae	*Sayornis saya*	Say's phoebe
Tyrannidae	*Tyrannus vociferans*	Cassin's kingbird
Vireonidae	*Vireo bellii pusillus*†	least Bell's vireo
Mammals		
Canidae	*Canis latrans*	coyote
Leporidae	*Sylvilagus audubonii*	desert cottontail
Procyonidae	*Procyon lotor*	raccoon
Sciuridae	*Spermophilus beecheyi*	California ground squirrel

†Listed or sensitive species

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Appendix C

EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

Appendix C
EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

U.S. Fish and Wildlife Service (USFWS)

FE	Federally listed endangered
FT	Federally listed threatened

California Department of Fish and Game (CDFG)

SE	State listed endangered
ST	State listed threatened
SSC	State species of special concern

MHCP Covered Species

Species listed as MHCP covered species indicate that these species would receive formal protection and take authorization upon approval of the MHCP under the state and federal endangered species acts.

Narrow Endemic

Narrow Endemic is a sensitivity rating given by the MHCP to indicate "those species considered so restricted in distribution and abundance that substantial loss of their populations or habitat might jeopardize the species' continued existence or recovery."

California Native Plant Society (CNPS) Codes

Lists

1A = Presumed extinct.
1B = Rare, threatened, or endangered in California and elsewhere. Eligible for state listing.
2 = Rare, threatened, or endangered in California but more common elsewhere. Eligible for state listing.
3 = Distribution, endangerment, ecology, and/or taxonomic information needed. Some eligible for state listing.
4 = A watch list for species of limited distribution. Needs monitoring for changes in population status. Few (if any) eligible for state listing.

List/Threat Code Extensions

.1 = Seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)
.2 = Fairly endangered in California (20 to 80 percent occurrences threatened)
.3 = Not very endangered in California (less than 20 percent of occurrences threatened, or no current threats known)

A CA Endemic entry corresponds to those taxa that only occur in California.

All List 1A (presumed extinct in California) and some List 3 (need more information; a review list) plants lacking threat information receive no threat code extension. Threat Code guidelines represent only a starting point in threat level assessment. Other factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in setting the Threat Code.

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